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

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The World Bank

1818 H Street NW

Washington DC 20433

Telephone: 202-473-1000

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Mr. MASOOD AHMED

CHRONOLOGICAL

1983  
January to June 30

The West Bank Group  
**Archives**



**1540558**

R1998-232 Other #: 9 Box #145370B  
Masood Ahmed - Chronological File - July to December 1983

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WBG Archives



TELETYPE UNIT  
CALL LETTERS  
DATE  
TIME

FLOOR 1 OF 1  
OFFICE/DEPT/DIV  
ALLOCATION 74545

MESSAGE NUMBER

TEST NUMBER  
(FOR CASHIER'S USE ONLY)

START  
HERE

DR. N. B. PRASAD, HYDERABAD, INDIA. (AAA) AM IN PROCESS OF  
FINALIZING TIMING FOR INDONESIA STATUS REPORT MISSION AND NEED TO  
CLARIFY YOUR TRAVEL PREFERENCES. THERE ARE BASICALLY TWO OPTIONS.  
(BBB) FIRST, YOU COULD START IN JAKARTA ON NOVEMBER 28 FOR A  
WEEK. IN THIS CASE, MATTHEW MITCHELL WOULD JOIN YOU FROM  
BANGLADESH. AFTER THE MISSION YOU COULD PROCEED DIRECTLY TO  
WASHINGTON FOR A WEEK OR SO TO FINALIZE BOTH THE INDONESIA REPORT  
AND THE PNG REPORT WHICH ALAHDAD WILL HAVE PREPARED BY THEN.  
(CCC) ALTERNATIVELY, YOU COULD VISIT JAKARTA FOR THE WEEK OF THE  
FIFTH OF DECEMBER. MITCHELL WOULD NOT BE AVAILABLE FOR THIS  
WEEK BUT WE WOULD SEND OUT SOMEONE ELSE TO JOIN YOU. AGAIN YOU  
COULD PROCEED AFTER THE MISSION TO WASHINGTON TO FINALIZE BOTH  
REPORTS. (DDD) MY PREFERENCE IS FOR THE FIRST OPTION BUT NEED  
YOUR RESPONSE URGENTLY TO FINALIZE MANAGERMENTS. UNABLE TO GET  
THROUGH BY PHONE FROM THIS END BUT YOU MIGHT HAVE BETTER LUCK.  
PLEASE CALL ME AT (202) 477-4545 OR AT HOME ON (202) 364-8102.  
REGARDS. MASOOD AHMED, ENERGY ASSESSMENTS DIVISION, INTBAFRAD.

END  
OF  
TEXT

PINK AREA TO BE LEFT BLANK AT ALL TIMES

INFORMATION BELOW NOT TO BE TRANSMITTED

CLASS OF SERVICE:	TELEX	TELEX NO.:	0155-483	DATE:	11/9/83
SUBJECT:	ESMP-Indonesia Status Report Miss.		DRAFTED BY:	MAhmed:raaf.	EXTENSION:
CLEARANCES AND COPY DISTRIBUTION:			AUTHORIZED BY:	Julian Bharier, Chief, EGYEA	
			DEPARTMENT:	Energy	
SECTION BELOW FOR USE OF CABLE SECTION					
CHECKED FOR DISPATCH					



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PAGE 1 OF 1

OFFICIAL DEPT DIV  
ABBREVIATION  
7-4545

MESSAGE NUMBER

TEST NUMBER  
(FOR CABLE SECTION USE ONLY)

START  
HERE

INTBAFRAD, NAIROBI, KENYA, MR. BAIG. RE: ENERGY ASSESSMENT  
STATUS REPORT AND OUR TELEX EXCHANGES IN AUGUST WHEN YOU INFORMED  
US THAT GOVERNMENT WOULD LIKE TO DELAY UNTIL OCTOBER THE PROPOSED  
MISSION TO FINALIZE THE ABOVE REPORT AND DISCUSS FOLLOW-UP  
ASSISTANCE UNDER THE ENERGY SECTOR MANAGEMENT PROGRAM. KEN  
NEWCOMBE IS NOW SCHEDULED TO VISIT ETHIOPIA IN EITHER THE SECOND  
OR THIRD WEEK OF DECEMBER AND WE WOULD LIKE HIM TO PROCEED FIRST  
TO NAIROBI FOR DISCUSSIONS TO CARRY OUT THE ABOVE TASKS. GRATEFUL  
IF YOU COULD LET US KNOW IF THIS APPROXIMATE TIMING IS CONVENIENT  
FOR GOVERNMENT. WE HAVE BEEN INFORMED BY PROGRAMS DIVISION THAT  
ENERGY MINISTRY HAS NOW BEEN CONSOLIDATED INTO MINISTRY OF ENERGY  
AND REGIONAL DEVELOPMENT WITH MR. J.G. KARUGA AS THE NEW PERMANENT  
SECRETARY. WOULD APPRECIATE ANY OTHER INFORMATION REGARDING POST  
ELECTION CHANGES THAT AFFECT OUR SECTOR OR WORK PROGRAM.  
REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLD BANK

END  
OF  
TEXT

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INFORMATION BELOW NOT TO BE TRANSMITTED


CLASS OF SERVICE: <b>TELEX</b>	TELEX NO.: <b>963-22022</b>	DATE: <b>NOVEMBER 8, 83</b>
SUBJECT: <b>ESMp-KENYA&lt;BAIG</b>	EXTENSION: <b>74545</b>	DRIFTED BY: <b>KNewcombe:ls</b>
CLEARANCES AND COPY DISTRIBUTION: <b>cc &amp; cleared with Mr. Anderson, (EA1)</b>	<b>J. Bharier, Chief, Energy Assess.</b>	
<b>cc: Mr. Wackman, EAP</b> <b>Mr. Newcombe, EGYEA</b>	DEPARTMENT: <b>ENERGY</b>	
SECTION BELOW FOR USE OF CABLE SECTION		
CHECKED FOR DISPATCH		



## OFFICE MEMORANDUM

To: Mr. Vincent J. Riley, IRD

Date: November 8, 1983

From: Julian Bharier, Chief, EGYEA 

Subject: CCAQ Inquiry on Trust Funds

1. I refer to your memo of November 4 and the attached draft letter to Mr. Samuelson.
2. As you know, we are executing agents for the Joint UNDP/World Bank Energy Assessment and Sector Management Programs which are partly financed by the UNDP Energy Account, which is itself a Trust Fund of the type referred to in Mr. Samuelson's memo. However, we are not involved in monitoring individual contributions into the Energy Account and, as such, we are not in a position to respond to the questions raised in para 3 of Mr. Samuelson's memo. The only point we can comment on is that our two programs are operated on a fully-funded basis in that the Energy Account allocations for these programs are covered by existing contributions into the Energy Account.
3. Finally, I should mention that while your paragraph 2 is an accurate reflection of our current experience, this situation may well change in the near future as the UNDP is currently in the process of obtaining from various donors, additional contributions specifically earmarked for the Assessment and Sector Management Programs. We are likely to be more closely involved in the administrative aspects of managing these specific contributions. However, the specific mechanisms that will be utilized to affect these contributions have still to be clarified.

MAhmed:aaf.





To: Messrs. D. C. Rao, Assistant Director, EGY and  
H. Kohli, Acting Assistant Director, IND

From: Masood Ahmed (E<sup>G</sup>HYEA) and Julio Gamba (INDEC)

Date: November 10, 1983

Subject: Coordination of ESMP and Industrial Energy Efficiency Unit  
Activities

Having discussed the above subject, we have agreed on some basic operational principle to ensure that our respective activities are properly coordinated and that we can collaborate in areas where this is mutually beneficial. These are set out below for your review and approval.

- (i) The IEEU will be the principal contact point in the Industry Department for all ESMP activities in the energy conservation area. This means that the IEEU will be responsible for obtaining and coordinating comments on these activities from the relevant IND operational divisions; the IEEU will also ensure that any projects or other activities identified through the ESMP are brought to the notice of the relevant IND division for whom they may be of interest.
- (ii) Whenever any industrial energy efficiency activities are carried out as part of the ESMP, the IEEU will be given first option to take responsibility for supervising their implementations as "sub~~f~~contractors" for the ESMP. They will do this work through their own staff, other IND staff or consultants. Where other IND staff are used, the IEEU will be responsible for identifying such staff,

obtaining their release for the necessary period and coordinating and supervising their work. Regardless of whether staff or consultants are used, the IEEU's management will be responsible for ensuring that the work performed is of satisfactorily high quality and that deadlines and budget estimates are met as far as possible.

(iii) Whenever such a subcontracting arrangement is made, the IEEU will be reimbursed from the ESMP consultant funds, equivalent to the resources spent on the specific task. This includes both the cost of any consultants used as well as the cost of direct staff input for execution, supervision and review. Budgetary transfers between the IEEU and other IND units will be determined internally in IND; the ESMP reimbursement for IEEU supervised work will be made as if the IND staff working on the activity were part of IEEU's budget.

(iv) ESMP management is accountable to UNDP and other donors on how their funds have been spent. Consequently, ESMP management will retain primary responsibility for the quality, cost and timeliness of all activities funded through the program. This means that for all ESMP-funded industrial energy efficiency activities subcontracted to the IEEU, ESMP management will need to clear, ex ante, all budgetary commitments, the scope of work and any final reports which will be issued as part of the ESMP



series. The choice of individual consultants will be the responsibility of the IEEU but they will need to be sensitive to the procurement concerns of individual donors to the program and will consult with ESMP management on the "appropriate" nationality mix.

- (v) Where the IEEU is unable to accept responsibility for supervising the implementation of an ESMP-funded industrial energy efficiency activity, it will still be expected to provide technical advice and support to ESMP staff as far as possible.
- (vi) To enable both units to plan their work programs, we will meet on a regular (monthly) basis to discuss potential projects in the pipeline as well as to review existing operations. We will also ensure that all relevant memoranda, correspondence etc. is copied routinely to the other units. However, we recognize that the very nature of the ESMP -- quick response to specific needs -- will limit the degree to which potential specific collaboration opportunities can be identified and planned for well in advance.
- (vii) If we are unable to resolve a disagreement on the interpretation of these guidelines, we will meet with you to discuss and resolve the issue.

2. We would be happy to clarify any of the above points at your convenience.

MAhmed:aaf

cc and cleared with: JBharier (EGYEA)

July 7, 1983

Mr. J. Masakhalia  
Permanent Secretary  
Ministry of Economic Planning and  
Development  
Nairobi  
KENYA

Dear Mr. Masakhalia:

I would like to thank you for the courtesies and help extended by yourself and your colleagues to Mr. Ken Newcombe during his two recent missions to Nairobi to follow up on the Energy Assessment Report, Kenya - Issues and Options in the Energy Sector, issued in May 1982. On the basis of Mr. Newcombe's discussions we have prepared a brief status report on the Kenya Energy Assessment which outlines recent developments in the sector and the progress made in implementing the various recommendations of the Energy Assessment Report, and identifies the priority areas where further technical assistance is required in the energy sector. I am pleased to attach a copy of this report for your information and comments. I would be grateful if you would inform us of any modifications or corrections that you would like to be made to this draft before we share it with any other donor agencies who may be interested in financing some of the technical assistance projects identified therein.

Regarding the implementation of the technical assistance projects described in the report, Mr. Newcombe has already outlined to you the possibility of financing some of this work through the Joint UNDP/World Bank Energy Sector Management Program. I am pleased to confirm that under this program we are able to embark immediately upon the following projects:

- (1) Power Loss Reduction Study: This project activates a study long since approved and submitted by your Government to UNDP, but for which funds were lacking. Under the cooperative agreement between the Bank and UNDP we can now proceed to fund the first phase of this important project with an estimated cost of \$50,000. Draft terms of reference for this work are being sent to Mr. Gecau at EAPL and a copy is also enclosed for your comments. As soon as we receive telexed approval of these terms of reference, we would propose mobilizing staff and consultants with a view to carrying out the fieldwork for this project in the first half of August 1983.



- (ii) Solar Water Heating Investment Program: Our role here has been defined in discussion with you as one of review of the quite comprehensive CIDA 'Solar Utility' project, the draft report of which is now with the various Government departments concerned and the EAPL. We expect to receive a copy when you have completed your own review. In that regard, we look forward to receiving guidance from you as to any specific matters arising from the CIDA report on which you would like to have follow-up assistance.

In addition to the above, the report has identified two other technical assistance projects for which we could also provide assistance depending upon the availability of additional funds to the Energy Sector Management Program which, as Mr. Newcombe mentioned to you, is still in its initial stages and only partially funded. These projects are:

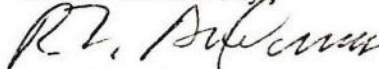
- (i) the Coal Substitution and Handling Study which has been allocated high priority in line with the discussions you had with Mr. Newcombe in June; and,
- (ii) the prefeasibility work leading to the commercialization and improved management of woodfuels.

In addition to the above there are discussions in progress within the Bank as to the best means of proceeding with the industrial energy conservation project that is presently included as a technical assistance component under the proposed refinery engineering loan. We would also appreciate your views on how you would like to proceed on this matter.

Finally, further work on the remaining two technical assistance projects (rationalization of ethanol program and developing a program for efficient bagasse utilization) should await the clarification of specific issues identified in the report.

We look forward to an early response on the matters raised above. Because of their interest in these matters, we are sending a copy of this letter to Mr. Kazaura, Permanent Secretary for Finance and Mr. Ligale, Permanent Secretary for Energy.

Yours sincerely,



R. N. Anderson  
Acting Division Chief  
East Africa Programs Department

Attachment

cc: Messrs. Kazaura, Permanent Secretary for Finance  
Ligale, Permanent Secretary for Energy

cleared with and cc: Mr. R. A. Anderson (EAl)

cc: Messrs. Bronfman, Erkmen, Killoran (EAP); Segura (IND); McBride,  
D. Thomas (EAl), Loos/Baig, RMEA; Rao, Fish, Bharier,  
Iskander, Wackman, Ahmed, Newcombe (EGY)

Mmes. K. Marshall (EAP); M. Haug (IND)

MAhmed/KNewcombe:cra





# Joint UNDP/World Bank Energy Sector Management Program

Activity Completion Report

No. 001/83

**DECLASSIFIED**

NOV 30 2022

**WBG ARCHIVES**

Country: KENYA

Activity: STATUS REPORT ON ENERGY ASSESSMENT FOLLOW UP

July 1983

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 not all of the energy sector investment and aid, which is essential to retard the worsening balance of payments situation, are able to be fully utilised due to the necessary severe stringencies on government expenditure which has had the inevitable impact of limiting effective counterpart contribution to some projects. Prolonged discussion between government and oil companies over refinery management and investment has further aggravated the impact of imported energy on economic development. In this situation relatively wideranging and quick 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 recognized 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.
  - (iv) Reduce the differential between normal and off peak power tariffs to better reflect economic costs and benefits.
  - (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.
- (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) 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 households 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) MOE indicated that the government's hesitation 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 a number of expatriate advisors in line positions. The German GTZ-SEP (Special energy project) have provided staff in an advisory role to the Ministry though not as departmental staff. The authority of the MOE is clearly related to its status within government which is slowly but surely increasing. 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, particularly in view of the many initiatives being struck in this field in Kenya. It has limited influential co-ordinating 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) The Olkaria Geothermal Expansion Project (approved in February, 1983) includes funds for technical assistance to devise a 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 and Ontario Hydro to assess the market for solar water heating in Kenya as an assistance to Government. Full details of the terms of reference and achievement of this aid project are being made available by CIDA and GOK as the outcome directly influences the scope of work to be undertaken under the ESMP. In addition an engineer and an analyst funded by the World Solar Power Foundation of London and the World Wildlife Fund 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 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 problems encountered in implementing KCFC investments are being discussed by senior policy makers. (see 2.3(ii) below). 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 ceased temporarily. MEPCD recognizes that some rationalization of this industry is important and should be pursued when circumstance permit an 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 UNIDO staff in the Ministry of Industry have proposed a 270,000 ha fuelwood development on semi-arid land in the coastal belt to service an iron and steel 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. The Bank's Industry Department has offered a US\$300,000 TA as part of the proposed refinery energy conservation and engineering design for reconfiguration loan. However, because of a deal in the start of this project, GOK has asked for assistance with industrial energy conservation under the ESMP facility. The Bank is following up in this request to see how this assistance can best be provided.

### 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. The planned Riana plant proposal has also been shelved. The Ministry of Economic Planning and Development has indicated that in due course it would like the Bank to assist in defining a rationalize ethanol development strategy and program.

(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. Direct Bank assistance is not required at this time but may be useful if this effort appears to be lagging through lack of funds or expertise. Thus a close monitoring of this program is recommended.

- (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 recommendations of the assessment report on the matter. This is not a high priority issue at this time.
- (iv) The Bank Group (including IFC), USAID and GOK have narrowed the options for refined products supply to an agreed reconfiguration of the refinery using thermal cracking technology. Further discussions are needed between GOK and oil companies over issues of crude procurement, partitioning of revenues from refining, and refinery management. MOE raised the issue of splitting the conservation and reconfiguration investments, some judgement about which will be necessary after further discussions in July based on additional work by A.D. Little and Associates.
- (v) The Bank assisted petroleum exploration promotion project has proceeded successfully through the first round of defining potential and soliciting interest in further exploration. These oil companies have begun to negotiate exploration agreements.
- (vi) Since the assessment the Olkaria field has indicated even greater promise with the tapping of dry steam. In addition to the recently approved loan for the Olkaria Geothermal Expansion Project, the Bank has begun preparation of a project to expand geothermal exploration in the wider Olkaria region and the Rift Valley. 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. 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 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 additional 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 (previously submitted to the UNDP/World Bank project but rejected 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

Project (i) has been incorporated in the ESMP and is outlined below. The best vehicle for project (ii) is the least cost development study to be financed under the Olkaria Geothermal Expansion project. In regard to (iii), the Bank and GOK have had discussions in the context of the proposed Kiambere Hydroelectric Project, although no component was included to finance a separate study in this regard.

4.2 In order of priority:

SOLAR WATER HEATING

- (i) Pursuant to the recommendation of the assessment mission GOK was 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 - has already been partly completed with CIDA assistance. 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>Phase I:</u>	3 man months
Market and economic studies for household and industry:	\$ 25,000
<u>Phase II:</u>	12 man months
Dependent on the extent and nature of the work funded by CIDA.	\$100,000
<u>Total Project</u>	
<u>Duration:</u>	6 months
<u>Total Project</u>	
<u>Cost:</u>	\$125,000



POWER SYSTEM LOSS REDUCTION STUDY

(ii) GOK had formally approved an EAPL request to UNDP for this study and this worthy project can now be re-activated as part of the ESMP, the project entails understaking an audit of the EAPL power system to identify points in transmission, distribution and thermal generation where losses could be reduced economically. Within the distribution system besides inspection of equipment and facilities a review would be made of design criteria, construction standards, and system planning, O&M and load control methodology. Metering systems and nontechnical loss potential will also be reviewed. Within the generation system thermal power plant will be examined to evaluate points of significant loss and procedures for monitoring generation efficiency will be reviewed. It is expected that projects to modify or install equipment will be identified in which case the relevant scope of work will be prepared to facilitate swift implementation.

Phase I. 4 man months

- (i) Comprehensive power loss audit
- (ii) Detailed outline of programme of implementation and relevant costs and benefits.

\$50,000

Phase II: 12 man months

- (i) Preparation of power loss monitoring and management information system.
- (ii) Implementation and training in EAPL power system

\$150,000

Total Project

Duration: 12 months

Total Project

Cost: \$200,000

(N.B. excludes software and hardware)

COAL HANDLING AND SUBSTITUTION

(iii) GOK is keen to proceed quickly with this project which arises from interaction between the government and the Bank over many years. With complete conversion of the cement industry to coal-firing likely it is timely to review in detail the entire market for coal in industry and to define the required coal handling facilities at the port and inland to interface with each point of end-use. This project will review the prospects for coal use in all large industries comparing coal with other fuels to ensure a least-cost strategy for interfuel substitution. The coal market

Phase I: 12 man months

- (i) Detailed review of the economic potential for coal substitution, specifying investment levels and economic benefits.

\$80,000

- (ii) Review of coal handling capability (in parallel with (i)).

\$40,000

Duration: 6 months

thus defined, including the cement industry, will then become the basis of a detailed review of the present coal handling capability and prefeasibility work for expanded port and inland handling facilities as required.

Phase II: 12 man months

- (i) Preliminary design and costing of handling possibilities, and project implementation planning.

\$120,000

Duration: 6 months

Total Project

Duration: 15 months

Total Project

Cost: \$240,000

#### EFFICIENT BAGASSE UTILIZATION

- (iv) 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: \$325,000



COMMERCIALIZATION AND IMPROVED MANAGEMENT OF  
WOODFUEL PRODUCTION

- (v) 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

- (vi) 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 in due course to draw on the Bank's assistance for this purpose. 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

**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

Chrom

November 8, 1983

Mr. Martin Soutter  
Bilateral Project Coordinator  
Canadian International Development Agency  
Hull, Quebec  
Canada

Dear Martin:

It was a pleasure to see you again during my trip to Hull last week. I found our discussions and the meetings with your country program colleagues extremely useful in clarifying a number of points relating to CIDA's proposed participation in the Energy Sector Management Program.

As we agreed, I am enclosing herewith two copies each of the reports completed to date under the ESMP. I mentioned to Gilles Bouchard that you would be giving one set of these reports to him and distribute the other to the relevant country desks. I will also send you three copies of all future ESMP reports as they are issued.

As I mentioned to you, I am planning my next visit to Ottawa for January 1984 (despite the weather!). By that time, we will have prepared specific proposals for ESMP activities in Uganda, Peru and Rwanda, the three countries which, along with Kenya, have been earmarked for Canadian supplemented ESMP assistance in this fiscal year. Hopefully, by then the ESMP PAM will also have been approved with CIDA and we should therefore be in a position to finalize individual country assistance programs.

I look forward to seeing you then. Best regards.

Yours sincerely,

Masood Ahmed  
Senior Economist  
Energy Assessment Division  
Energy Department

Attachment

bcc: Messrs. Bharier, Bates (EGYEA);  
Mashler (UNDP, NY)


Ahmed:aaf.



## OFFICE MEMORANDUM

TO: Distribution

DATE: November 7, 1983

FROM: Julian Bharier, Chief, EGYEA SUBJECT: MALAWI: Tobacco Industry Energy Efficiency Study

1. Attached please find for your review and comments a copy of the above report which has been prepared under the UNDP/World Bank Energy Sector Management Program. This draft incorporates the comments received during a working level review of the study in September 1983. It has also been discussed at the working level with Government representatives who were visiting Washington in October and it has been cleared by the Government for final distribution under the ESMP. This will now be done following your review and clearance of the attached draft.

2. Please send any comments you might have to Masood Ahmed (X7-4545).

Attachment

Distribution:

Messrs. Bronfman, Wackman, Ali (EAP);  
Gulhati (EANVP); Messenger (EAL)  
Rao (EGYEC); Ahmed (EGYEA)

cc: Working Level Reviewers: Messrs. Wagner, Schramm (EAP)  
Hall, King (EAL)  
Newcombe, Terrado (EGY)

MAhmed:ks



November 1, 1983

Mr. E. Fossati  
Head of Division of Non Associated  
Developing Countries  
Commission of the European Communities  
Rue de la Loi 200  
B-1049 Brussels  
Belgium

Dear Mr. Fossati:

Re: Cofinancing of Rural Energy Projects and Studies

Further to my telex of October 25, I am pleased to enclose three preliminary project profiles which we would like to propose to you for cofinancing with the UNDP/World Bank Energy Sector Management Program. The three projects and their estimated total cost are as follows:

Bolivia	- Sugar Industry Energy Efficiency Study	\$225,000
Haiti	- Bagasse Utilization Study	\$225,000
Sri Lanka	- Rural Industry Energy Efficiency Study	\$170,000

All three projects have been identified as priority areas for follow up by our assessment and sector management work. Moreover, in all of these cases there is a strong presumption that the feasibility work proposed will lead to the identification of highly economic investment opportunities.

Regarding the administrative arrangements for implementing these projects, as I indicated in my telex, we do not foresee any problems with adopting the cofinancing mechanism you have proposed. However, while we would be happy to provide the technical supervision of the consultants working on these studies, our preference would be that the actual contracting of any consultants financed by the EEC be done directly by your organization. Please let us know if this arrangement is likely to pose any difficulties for you.

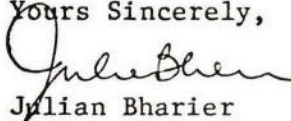
In terms of the specific contributions for the enclosed projects, we agree with your suggestion that the ESMP contribution should be large enough to cover the fixed staff and management costs for each project. On this basis, we would suggest an EEC contribution of \$200,000 each for the projects in Bolivia and Haiti and \$150,000 for the rural industry efficiency study in Sri Lanka. These contributions would cover the estimated cost of professional fees, transportation and other expenses of the consultant teams recruited to carry out work.



Finally, let me say that our staff would be happy to visit your offices to respond to any queries or comments you might have on these proposals.

I look forward to hearing from you and thank you once again for your interest.

Yours Sincerely,



Julian Bharier  
Energy Assessments Division  
Energy Department

Attachments

UNDP/World Bank  
Energy Sector Management Program  
Preliminary Project Profile

Bolivia: Sugar Industry Energy Efficiency Study

Background

Despite the fact that Bolivia has large energy resources (hydropower and gas) its modern economy is based on liquid fuels, which currently supply almost four-fifths of commercial energy requirements. To improve this situation, plans are underway for a large scale liquid fuels substitution program relying primarily on developing the country's gas resources. However, it may not be economically feasible to connect liquid fuel users in all areas to the natural gas network and it will also be important to ensure that users who do have access to gas, burn this fuel efficiently.

Bolivia's sugar industry is currently a fairly inefficient energy user. In addition to using all of its bagasse residue for energy production, the industry also consumes large amounts of oil (8,500 tons per year) gas (575 billion cubic feet per year) and fuelwood. By way of comparison a modern, energy-efficient sugar industry should be able not only to meet its own steam and power requirements but to provide surplus energy to the rest of the economy. However, while some improvement in the energy efficiency of the industry is almost certainly economic, the extent of this needs to be verified given the low opportunity cost of natural gas in the country. This applies particularly to the sugar industry in the Santa Cruz area which has access to, and relies heavily on, natural gas use.

The prospects for improving energy efficiency are likely to be greater in the two sugar mills in the Tarija Bermejo area. As natural gas is not available in this area, these mills rely primarily on oil (6,200 tons per year) as an external supplement for their energy requirements. The building of a gas pipeline to meet the specific energy needs of these mills is under consideration. However, it may be more economical to make these mills energy self sufficient by improving the efficiency with which they burn bagasse and use the resulting energy.

Project Proposal

The proposed project will comprise a detailed technical and economic analysis of the feasibility of upgrading the energy efficiency of the sugar industry in Bolivia. Prospects for this are likely to vary considerably between the Tarija Bermejo and Santa Cruz areas and therefore the two will be examined separately. However, in both cases the analysis will cover both the prospects for increasing the energy production capacity of the mills through better utilization of bagasse, as well as the prospects for improving the efficiency of energy utilization in the mills, whether generated from bagasse or from other



primary energy sources. As appropriate, the project will also examine the prospects for using surplus bagasse either as direct household or industrial fuel (in densified form) or for alcohol or paper production.

In addition to standard economic analyses and a technical engineering review, the project will also prepare a detailed cost and design package for any recommended investments, examine financing options and identify any policy or other Government action required to implement the improvements.

#### Schedule and Costs

The project will take about 12 months to complete after selection of consultants and will require an input from at least five specialists for varying periods. The total project cost is expected to be about \$225,000 including supervision by ESMP staff. Detailed terms of reference and a breakdown of project costs can be provided if necessary.

EGYEA/MA/Oct., 1983

UNDP/World Bank  
Energy Sector Management Program  
Preliminary Project Profile

Haiti: Bagasse Utilization Study

Background

Electricity demand in Haiti is expected to rise from 54 MW in 1980 to 106 MW in 1986 and to reach a level of 140 MW by 1990. During the 1990's an annual increase in electricity generating capacity of 15-20 MW per year is expected. The greater part of the expansion of the generating capacity will come from the estimated 120 MW hydro-electric potential of Haiti. The remainder will be diesel plants or steam plants using domestic or imported coal. However, Haiti has another under-utilized energy source, viz. bagasse. It is estimated that 85,000 ha are planted with sugar cane producing about 2 million tons of sugar cane per year. The theoretical energy content of the bagasse residue from this cane is about 120,000 tons of oil equivalent. Although most of this energy is required for the processing of the cane into sugar, modern and energy efficient sugar mills should have enough surplus bagasse to produce as much as 50 kwh of surplus electricity for every ton of cane processed. Many countries are improving the efficiency of their sugar mills to realize this potential as an economic component of national power supply. In Haiti even if half of this potential for surplus energy production were realized, the 50 Gwh of electricity produced would be equivalent to 20 percent of total generation in the interconnected system.

Currently, this potential is largely unexploited and the sugar mills are net energy importers. Improving their energy efficiency should be economically viable but a number of obstacles need to be overcome. First, fluctuations in the size of the sugar cane crop sometimes lead to extended periods of mill closures. Second, the milling industry is lukewarm about being connected to an electricity grid which is unreliable because they fear that this would have an adverse impact on their own operations.

A further complication in Haiti is that only a quarter of the annual cane production is processed into sugar in industrial mills. The remainder is either used directly for animal or human consumption or processed into alcohol in artisanal workshops. These workshops use considerable amounts of fuelwood to supplement bagasse for their operations but at the same time appear to dispose of large quantities of surplus bagasse.



## Project Proposal

Given these factors, it is clear that no single or straight forward technique can be used to improve the efficiency of bagasse utilization in Haiti. Rather two parallel efforts are envisaged in this proposed project. First, for the sugar milling industry a detailed technical and economic analysis of the prospects for upgrading their energy efficiency should be carried out. Special focus will have to be placed on the obstacles to generate surplus bagasse for sale as power such as fluctuating sugar cane production, plant management, and the feasibility of connecting the sugar mills to the grid. The project will review in detail the production and utilization of bagasse in the individual industrial mills. It will analyze sugar cane harvesting, collection, storage and handling practices and examine seasonal fluctuations in the supply of bagasse. The project will also review the possible markets for surplus power and examine the terms for the sale of power as well as related institutional and financial arrangements. The project will also make a detailed design of an investment package including a financing plan. Finally, the project will examine the need for any Government action to bring about these changes.

A parallel effort will examine the use of bagasse by artisanal workshops. Here, the focus of the project will be on finding low cost and easy to implement options to increase the economic use of bagasse by these workshops. To this end, a detailed review of technologies used in these workshops will be made in order to assess: (a) whether their energy efficiency can be improved; (b) if waste bagasse can economically be converted into a useful household or industrial energy form; and (c) whether it is socially possible to close the most inefficient units and increase availability of cane for processing in industrial sugar mills. The project will include a review of financial, technical and institutional needs and arrangements. It will also identify training requirements and the most appropriate role of the government with regard to these issues.

### Schedule and Costs

The total project will take about 12-18 months to complete after the selection of consultants and will require at least five specialists for varying periods. The total project cost is estimated to be about \$225,000, including supervision by ESMP staff. Detailed terms of reference and a breakdown of project costs can be provided if necessary.

EGYEA/Oct. 31, 1983

UNDP/World Bank  
Energy Sector Management Program  
Preliminary Project Profile

Sri Lanka Rural Industry Energy Efficiency Project

Background

Given the present trend of fuelwood consumption in Sri Lanka, it is expected that the natural forest cover will be completely denuded in about 30 years. Long before then localized fuelwood shortages will emerge with important social, environmental and economic implications. Furthermore, reduced fuelwood availability will inevitably lead to some increase in commercial energy demand, which will have important consequences for the import bill of Sri Lanka. Rural industry, (mainly tea drying, brick making and copra processing), accounts for 25% of total fuelwood consumption and for a considerable amount of oil consumption. It is expected that through improved efficiency of processing techniques about 30-40% savings in the consumption of fuelwood (and oil products) can be achieved in these industries. However, a more detailed analysis of their energy use patterns is needed in order to establish the most appropriate technology package to realize the possible energy savings.

Project Proposal

This project will further define the prospects for upgrading energy efficiency in rural industries such as tea drying, brick making and copra processing as identified by the energy assessment. The project will make an inventory of the various technologies used in these industries on the basis of which it will formulate detailed proposals with regards to designs and technologies which will result in considerable energy savings. The project will in this connection inter alia pay special attention to the possible use of heat gasifiers and will provide a detailed study of the economics of the energy saving technologies. It will prepare cost estimates for any recommended investments and will also prepare a detailed outline of any further feasibility or pre-investment work required. Finally, the project will identify the most appropriate role of government both with regard to investment and institutional requirements such as training.

Schedule and Costs

The project will approximately take 12 months to complete after the selection for consultants and will require inputs from at least three specialists for varying periods. The total cost is expected to be about \$170,000 including supervision by ESMP staff. Detailed terms of reference and a breakdown of project costs can be provided if necessary.

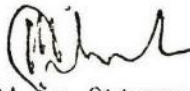
EGYEA/WF/October 1983



## OFFICE MEMORANDUM

November 4, 1983

TO: Mr. J. Bharier, Chief, EGYEA

FROM: Masood Ahmed, EGYEA 

SUBJECT: Discussions with CIDA in Ottawa  
Back to Office Report.

1. I visited Ottawa on November 1-3 with Messrs. Deraet and Thiam to discuss the coordination of energy assistance activities in Senegal. I also met with Mr. Soutter and other CIDA officials (listed in Annex II) to follow up on other operational matters relating to the ESMP.

2. The results of our meetings on Senegal and on the follow up action required there are being summarized in a separate back to office report being prepared by Mr. Deraet. The basic conclusion is that CIDA has substantial resources allocated for assistance to the energy sector in Senegal and are likely to pick up on many of the TA recommendations of the assessment. However, while they are willing to cooperate with the Bank by exchanging information, results, etc. it appears unlikely that they will participate in any joint projects either through the ESMP or otherwise. In itself, this would not be any cause for concern, except that the discussions left all three of us with a nagging doubt on whether there existed in CIDA an adequate technical capability for the effective supervision of the various activities they propose to finance. Their thinking on the mechanisms for packaging and implementing the various projects identified in the assessment - conservation, solar water heating, agricultural residue utilization and institutional strengthening of the Department of Energy - does not appear to have progressed much beyond the preliminary ideas set out in the assessment itself. This despite the fact that their programming and appraisal mission (which will finalize their project proposals with the Government and which will then be followed directly by internal CIDA approval and contracting out of the work to various consulting firms) is leaving for Senegal this week. We tried to help by outlining for them some of our recent thinking on these issues and offered to provide any additional briefings, comments etc. as these projects proceed further in terms of implementation. I also pointed out the possibility of cofinancing these projects with the ESMP. It is not clear whether this offer will be taken up but they did agree to come back to us after their mission to discuss their findings and also any specific collaboration proposals.

ESMP Contribution

3. Martin Soutter explained to me that the PIM-PAM process is slowly moving through the system. The current schedule is for final approval of both PAM's (Assessment and ESMP) by December 1983. Thereafter as far as CIDA is concerned, the first tranche (i.e., the FY 83-84 contribution) could be transferred straight away. However, a



potential stumbling block is UNDP's desire to use the new model third party cost sharing agreement to effect the transfer. The use of this agreement, rather than say the exchange of letters mechanism used for the handpumps project, could delay the actual transfer by a further six months because the new agreement, being a "model", will have to be reviewed and cleared by all branches of CIDA as well as other Government agencies. Soutter's strong preference, therefore, is to use the already tried handpumps agreement with a clause that this would be without prejudice to any overall mechanism for contributions agreed between UNDP and CIDA. I share this preference not only because of the delay but also because retroactive financing of FY 83-84 expenditures may be more difficult after March 84 when CIDA's fiscal year ends. I told Soutter that I would relay his concerns to UNDP and try to see if the older mechanism could be used instead.

4. Regarding the specific country coverage and dollar contributions, Mr. Soutter had just finalized the list before my visit. However, following a meeting with the Country Program Director for Kenya and Uganda, I was able to increase the ESMP contribution for Kenya from C\$366,000 to C\$850,000 and to add a further C\$200,000 for Uganda. As the final PAM had not been distributed to the Vice Presidents' Committee for clearance, we were able to substitute the revised list which is attached as Annex I.

5. Some additional points regarding CIDA's participation were also clarified through meetings with Mr. Soutter and the Country Program Officers for Kenya, Uganda, Peru and Rwanda. These are listed below:

- (i) The allocation for each country is a ceiling and the actual contribution will depend on the cost of the assessment and agreed ESMP activities in each country.
- (ii) The two PAM's provide approval for activities listed in the specific countries. If one of these countries drops out (e.g., if the assessments in Egypt and Colombia are deferred or cancelled) then the amount allocated for those countries will simply drop out. It cannot be transferred to any other country in the document nor can a new country be introduced. To get a CIDA contribution for a new country will require first, agreement with the relevant country programing officer and second, a separate PIM-PAM document covering that country. However, that PIM-PAM should get through the system fairly quickly because it could make extensive cross references to the current PIM-PAM.
- (iii) The PAM for the Assessments refers to "best efforts" on procurement of Canadian consultants. However, the PAM for the ESMP sets an explicit target of 60% Canadian procurement. (Incidentally, this 60% would include travel costs, subsistence expenses etc. that are associated with Canadian consultants).



- (iv) While it is not explicitly spelt out, the 60% figure can be interpreted as a program target - i.e., in any given year CIDA would expect 60% of its total contribution to the ESMP to be spent on Canadian procurement. However, in this (as in most other matters) the country desk officers will have the final say. Of the four countries targeted for the first year, the desk officers for Kenya, Uganda and Peru told me that they had no problems with this approach. However, for Rwanda, while the program officer agreed with the principle, he stressed that it would be highly desirable to meet the 60% target at the country level as well, because Rwanda was being watched as a test case by the other francophone Africa desks whose principal concern about participating in the program was that this would take business away from Canadian firms. The procurement record on Rwanda would, therefore, have a critical impact on future participation in the ESMP by other country desks in the region.

I gave Mr. Soutter a copy of all completed ESMP reports and agreed with him a procedure for the dissemination of future ESMP and Assessment reports. As each report is completed we will send three copies to Soutter who will keep one for his central files and pass the other two to the relevant Country Desk and to Mr. Bouchard, the head of the Energy Section in the Resources Directorate. The Desk Officers will get in touch with us directly if they want additional information or briefings. Incidentally, Mr. Bouchard, who has just returned from a year's study course in France, will be an important element in our dealings with CIDA where he is effectively the head of the energy advisory group. I had a long meeting and lunch with him and he seemed to be knowledgeable and friendly and responded positively to improving collaboration between the two agencies.

7        Regarding my discussions on specific countries, the following points are worth recording;

- (i) Kenya. Subject to approval of the overall EMSP PAM, the country program for Kenya is now agreed. CIDA will finance the coal import action plan as well as the peri urban fuelwood plantation feasibility study. Terms of reference for these studies have been agreed and the money for them will be transferred immediately upon PAM approval and agreement with UNDP on a transfer mechanism. CIDA is also interested in financing the investments identified by the ongoing power efficiency audit study. For this they could establish a line of credit for EAP&L if the Government of Kenya so requests. We agreed that during the Nov/Dec ESMP mission to Kenya, we would indicate that in principle the coal import and peri urban fuelwood studies would be carried out in 1984 with Canadian support. We would also raise the possibility of obtaining Canadian assistance for financing the EAP&L rehabilitation program.

- (ii) Uganda. CIDA will finance upto C\$200,000 of ESMP administered TA in the country. Tentatively, we agreed that this could cover (a) the longer term assistance to the Bank of Uganda for developing an effective petroleum import monitoring system (identified by Ogmen's work) and (b) the conservation package for the public transport sector (identified by Robinson). We will send them more detailed proposals by the end of the year.
- (iii) Peru. CIDA has an overall programming mission scheduled for late January 1984 and would very much like our proposals for technical assistance before that date. I said that on our current schedule the green cover would have been discussed with the Government by then and we should be able to send them a copy. I also said that we would call Mr. Anderson (country director) and discuss the TA proposals in the assessment before we went out to discuss the report, so as to have at least a preliminary idea of CIDA preferences as background for our discussion.
- (iv) Rwanda. I agreed to send up the Assessment Status Report as soon as it was agreed with the Government. We would then meet with the relevant CIDA staff to see which of the TA proposals identified therein, they would most like to be associated with. Tentatively, we agreed that such a meeting would take place in January 1984.

Next Steps.

Internally, I will follow up on the points raised above. However, we also need to discuss the transfer mechanism question with UNDP to stress the importance of being flexible in this case. In terms of the next contact with CIDA, I propose to go back to Ottawa in January with specific proposals for Uganda, Peru and Rwanda. It may also be useful for some of the staff working on these countries to join in that mission.

cc: Messrs. Mashler, Cox, Hillis (NY) Rao, Bates (EGYEA)  
Ms. Owen (EGYEA)



Annex ICURRENT LIST OF PROPOSED CANADIAN CONTRIBUTION

	<u>ASSESSMENTS</u>		<u>C \$ (000)</u>
1983/84	Tanzania	244	
	Egypt	244	
	Colombia	183	
	Jamaica	<u>183</u>	854
1984/85	Ghana	244	
	Upper Volta <u>a/</u>	122	
	Cameroon	244	
	Ivory Coast	<u>244</u>	854
1985/86	Guyana	183	
	Nicaragua <u>b/</u>	122	
	Honduras	<u>122</u>	<u>427</u>
	Total		2,135

a/ Subject to resumption of normal relations.

b/ Subject to continuing eligibility

<u>ESMP</u>			
1983/84	Peru	610	
	Kenya	850	
	Rwanda	244	
	Uganda	<u>200</u>	
			1,904
1984/85	Tanzania	610	
	Egypt	610	
	Colombia	610	
	Jamaica	<u>610</u>	
			2,440
1985/86	Ghana	<u>610</u>	
			<u>610</u>
	Total		4,954



Discussions with CIDA Nov. 2-3

**List of Persons Met**

- Mr. Pouliot, Vice President, Francophone (Africa)
- Mr. Pierre David, Country Program Director (Senegal)
- Ms. L. Groleau, Country Analyst, (Senegal)
- Ms. Scrimshaw, Assistant Director, Programming, (Francophone Africa)
- Mr. Georges Barchecheat, Country Analyst, Rwanda
- Mr. Martin Soutter, Bilateral Coordinator and Country Program Director (Tanzania)
- Mr. Mike Jenkyns, Country Program Director (Kenya and Uganda)
- Mr. Brodie Anderson, Country Analyst (Kenya)
- Mr. Robert Anderson, Acting Program Director (Peru)
- Mr. Gilles A. Bouchard, Chief, Energy Sector, Resources Branch
- Mr. Roland Brilot, Energy Specialist, Resources Branch
- Mr. George McAuley, Energy Specialist, Resources Branch
- Mr. Peter Dale, Energy Specialist, Resources Branch

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

# OFFICE MEMORANDUM

TO: Mr. Peter Hall, Acting Chief, EALDB

DATE: November 4, 1983

FROM: Julian Bharier, Chief, EGYEA *JB*

SUBJECT: Malawi: Technical Assistance II  
Supervision of the Tobacco Industry Energy Efficiency  
Component

1. I refer to your memorandum of November 3 on the above subject. Our division will be pleased to take the responsibility for supervising the tobacco industry energy efficiency component of the proposed TA II Credit. This work will be carried out as part of our Energy Sector Management Program operations. Mr. Willem Floor, who is the designated project officer for this task, will contact you and the regional projects staff shortly to work out a detailed supervision program beginning with the proposed December post-appraisal/supervision mission.
2. Let me emphasize, however, that as with the supervision of the institutional assistance component of the same TA project, our continued participation in supervising this work beyond CY84 is contingent upon the allocation of the required resources in the FY85-86 budgets. We, therefore, gratefully accept your offer to support our budget submission to PAB in the forthcoming budget exercise.
3. I look forward to our fruitful collaboration in the execution of this important task.

cc: Messrs. Kraske (EALDR); Bronfman (EAPDR); Rao, Floor (EGY)  
Wackman, Ali, Schramm (EAP); King, Morris (EALDB)

MAhmed:ks

*M*



November 4, 1983

Mr. Gilles A. Bouchard  
Chief, Energy Sector  
Resources Branch  
CIDA  
200 Promenade du Portage  
Hull, Quebec  
Canada

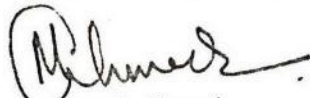
Dear Gilles:

It was a pleasure to meet you in Ottawa this week. As we discussed, I am enclosing two copies of the Solar Pumping Study that has recently been completed for the Bank. I hope that this will be useful for you and your colleagues.

I should be back in Hull around January 1984 to discuss operational matters relating to CIDA's participation in the Energy Sector Management Program. I hope that we will be able to get together then.

Best regards.

Sincerely yours,



Masood Ahmed  
Senior Economist  
Energy Assessments Division  
Energy Department

Enc.

*M. Ahmed  
Chron file*

UNDP/World Bank  
Energy Sector Management Program  
Preliminary Project Profile

Haiti: Bagasse Utilization Study

Background

Electricity demand in Haiti is expected to rise from 54 MW in 1980 to 106 MW in 1986 and to reach a level of 140 MW by 1990. During the 1990's an annual increase in electricity generating capacity of 15-20 MW per year is expected. The greater part of the expansion of the generating capacity will come from the estimated 120 MW hydro-electric potential of Haiti. The remainder will be diesel plants or steam plants using domestic or imported coal. However, Haiti has another under-utilized energy source, viz. bagasse. It is estimated that 85,000 ha are planted with sugar cane producing about 2 million tons of sugar cane per year. The theoretical energy content of the bagasse residue from this cane is about 120,000 tons of oil equivalent. Although most of this energy is required for the processing of the cane into sugar, modern and energy efficient sugar mills should have enough surplus bagasse to produce as much as 50 kwh of surplus electricity for every ton of cane processed. Many countries are improving the efficiency of their sugar mills to realize this potential as an economic component of national power supply. In Haiti even if half of this potential for surplus energy production were realized, the 50 Gwh of electricity produced would be equivalent to 20 percent of total generation in the interconnected system.

Currently, this potential is largely unexploited and the sugar mills are net energy importers. Improving their energy efficiency should be economically viable but a number of obstacles need to be overcome. First, fluctuations in the size of the sugar cane crop sometimes lead to extended periods of mill closures. Second, the milling industry is lukewarm about being connected to an electricity grid which is unreliable because they fear that this would have an adverse impact on their own operations.

A further complication in Haiti is that only a quarter of the annual cane production is processed into sugar in industrial mills. The remainder is either used directly for animal or human consumption or processed into alcohol in artisanal workshops. These workshops use considerable amounts of fuelwood to supplement bagasse for their operations but at the same time appear to dispose of large quantities of surplus bagasse.



## Project Proposal

Given these factors, it is clear that no single or straight forward technique can be used to improve the efficiency of bagasse utilization in Haiti. Rather two parallel efforts are envisaged in this proposed project. First, for the sugar milling industry a detailed technical and economic analysis of the prospects for upgrading their energy efficiency should be carried out. Special focus will have to be placed on the obstacles to generate surplus bagasse for sale as power such as fluctuating sugar cane production, plant management, and the feasibility of connecting the sugar mills to the grid. The project will review in detail the production and utilization of bagasse in the individual industrial mills. It will analyze sugar cane harvesting, collection, storage and handling practices and examine seasonal fluctuations in the supply of bagasse. The project will also review the possible markets for surplus power and examine the terms for the sale of power as well as related institutional and financial arrangements. The project will also make a detailed design of an investment package including a financing plan. Finally, the project will examine the need for any Government action to bring about these changes.

A parallel effort will examine the use of bagasse by artisanal workshops. Here, the focus of the project will be on finding low cost and easy to implement options to increase the economic use of bagasse by these workshops. To this end, a detailed review of technologies used in these workshops will be made in order to assess: (a) whether their energy efficiency can be improved; (b) if waste bagasse can economically be converted into a useful household or industrial energy form; and (c) whether it is socially possible to close the most inefficient units and increase availability of cane for processing in industrial sugar mills. The project will include a review of financial, technical and institutional needs and arrangements. It will also identify training requirements and the most appropriate role of the government with regard to these issues.

## Schedule and Costs

The total project will take about 12-18 months to complete after the selection of consultants and will require at least five specialists for varying periods. The total project cost is estimated to be about \$225,000, including supervision by ESMP staff. Detailed terms of reference and a breakdown of project costs can be provided if necessary.

EGYEA/Oct. 31, 1983

*Manuel  
Chavez*

UNDP/World Bank  
Energy Sector Management Program  
Preliminary Project Profile

Bolivia: Sugar Industry Energy Efficiency

Background

Despite the fact that Bolivia has large energy resources (hydropower and gas) its modern economy is based on liquid fuels, which currently supply almost four-fifths of commercial energy requirements. To improve this situation, plans are underway for a large scale liquid fuels substitution program relying primarily on developing the country's gas resources. However, it may not be economically feasible to connect liquid fuel users in all areas to the natural gas network and it will also be important to ensure that users who do have access to gas burn this fuel efficiently.

Bolivia's sugar industry is currently a fairly inefficient energy user. In addition to using all its bagasse residue for energy production, the industry also consumes large amounts of oil (8,500 tons per year) gas (575 billion cubic feet per year) and fuelwood. By way of comparison a modern, energy-efficient sugar industry should be able not only to meet its own steam and power requirements but to provide surplus energy to the rest of the economy. However, while some improvement in the energy efficiency of the industry is almost certainly economic, the extent of this needs to be verified given the low opportunity cost of natural gas in the country. This applies particularly to the sugar industry in the Santa Cruz area which has access to, and relies heavily on, natural gas use.

The prospects for improving energy efficiency are likely to be greater in the two sugar mills in the Tarija Bermejo area. As natural gas is not available in this area, these mills rely primarily on oil (6,200 tons per year) as an external supplement for their energy requirements. The building of a gas pipeline to meet the specific energy needs of these mills is under consideration. However, it may be more economical to make these mills self sufficient by improving the efficiency with which they burn bagasse and use the resulting energy.

Project Proposal

The proposed project will comprise a detailed technical and economic analysis of the feasibility of upgrading the energy efficiency of the sugar industry in Bolivia. Prospects for this are likely to vary considerably between the Tarija Bermejo and Santa Cruz areas and therefore the two mills will be examined separately. However, in both cases the analysis will cover both the prospects for increasing the energy production capacity of the mills through better utilization of bagasse, as well as the prospects for improving the efficiency of energy utilization in the mills, whether generated from bagasse or from other



primary energy sources. As appropriate, the project will also examine the prospects for using surplus bagasse either as direct household or industrial fuel (in densified form) or for alcohol or paper production.

In addition to standard economic analyses and a technical engineering review, the project will also prepare a detailed cost and design package for any recommended investments, examine financing options and identify any policy or other Government action required to implement the improvements.

#### Schedule and Costs

The project will take about 12 months to complete after selection of consultants and will require an input from at least five specialists for varying periods. The total project cost is expected to be about \$225,000 including supervision by ESMP staff. Detailed terms of reference and a breakdown of project costs can be provided if necessary.

EGYEA/MA/Oct., 1983

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SUNE NORRBACK, IVO CONSULTING ENGINEERS LTD, HELSINKI. THANK YOU  
 FOR YOUR TELEX OF OCTOBER 27 TO MR. BHARIER. UNFORTUNATELY HE  
 WILL BE TRAVELLING WHEN YOU VISIT WASHINGTON AT THE END OF  
 NOVEMBER, BUT IN HIS ABSENCE I WILL BE HAPPY TO MEET WITH YOU AND  
 TO DISCUSS THE POINTS YOU HAVE RAISED IN YOUR TELEX. PLEASE LET  
 ME KNOW WHEN DURING YOUR VISIT YOU WOULD LIKE US TO MEET.  
 REGARDS. MASOOD AHMED.

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CLASS OF SERVICE	TELEX	TELEX NO.	124608 VOIMA SF	DATE	10-28-83
SUBJECT	M. Ahmed:dlw			EXTENSION:	74545
CLEARANCES AND COPY DISTRIBUTION:	AUTHORIZED BY		J. Bharier, Chief, EGYEA		
	DEPARTMENT		ENERGY		
	SECTION FOR USE OF CABLE SECTION				
CHECKED FOR DISPATCH					

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OFFICIAL DEPT/DIV  
ABBREVIATION

75016

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(FOR CASHIER'S USE ONLY)

Grid for test number

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*ES. MP  
Senegal*

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RE

FOR M. BENJAMIN, INTBAFRAD, DAKAR, SENEGAL.

RE ENERGY ASSESSMENT FOLLOW UP.

YOU WILL RECALL THAT DURING THE GREEN COVER ASSESSMENT REPORT DISCUSSIONS IN MAY, THE MINISTER OF INDUSTRY AND THE DIRECTOR OF ENERGY HAD INDICATED THAT THEY WOULD LIKE THE BANK TO ASSIST THE GOVERNMENT IN IMPLEMENTING THE RECOMMENDATIONS OF THE ASSESSMENT REPORT. WE IN TURN HAD INDICATED THAT GIVEN THE HIGH PRIORITY THAT THE BANK ATTACHED TO THE ENERGY SECTOR, SUCH A REQUEST FOR ASSISTANCE WOULD BE FAVORABLY CONSIDERED. WE HAD ALSO OUTLINED THE POSSIBILITY OF PROVIDING FOLLOW UP TECHNICAL/MANAGERIAL ASSISTANCE UNDER THE AEGIS OF THE JOINT UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM. IT WAS AGREED THAT THE NEXT STEP WAS FOR THE GOVERNMENT TO PREPARE, WITH THE HELP OF THE BANK FINANCED RESIDENT ENERGY ADVISERS, A SPECIFIC PROPOSAL OF WHAT TECHNICAL ASSISTANCE THEY WOULD LIKE THE BANK TO PROVIDE IN THE SECTOR. THE ENERGY ASSESSMENT REPORT PROVIDES A BASIS FOR PREPARING SUCH A PROPOSAL BUT THE GOVERNMENT NEEDS TO DEFINE THE PRECISE ROLE THAT IT WOULD LIKE THE BANK AND OTHER AGENCIES TO PLAY IN MEETING THESE REQUIREMENTS. SINCE MAY, THE GOVERNMENT HAS CONTINUED TO EXPRESS AN INTEREST IN BANK ASSISTANCE FOR FOLLOW UP TO THE ASSESSMENT BUT WE

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CLASS OF SERVICE: <b>TELEX</b>		TELEX NO.:	DATE: <b>OCT. 28, 1983</b>
SUBJECT:	DRAFTED BY:	EXTENSION:	
CLEARANCES AND COPY DISTRIBUTION:	AUTHORIZED BY (Name and Signature): <i>P de P...</i>		
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OFFICIAL DEPT/DIV  
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HAVE NOT RECEIVED ANY FORMAL PROPOSAL. IN PARALLEL, VARIOUS  
 BILATERAL AGENCIES, NOTABLY CIDA, HAVE ALSO EXPRESSED A STRONG  
 INTEREST IN PARTICIPATING IN THIS FOLLOW UP BOTH DIRECTLY AND  
 THROUGH COFINANCING WITH THE BANK. IN THIS CONTEXT, A CIDA  
 MISSION IS SCHEDULED TO VISIT DAKAR NOVEMBER 11 TO 26 TO DISCUSS  
 THEIR FUTURE ENERGY ASSISTANCE PROGRAM. GIVEN THIS BACKGROUND, WE  
 WOULD APPRECIATE IT IF YOU COULD MEET WITH MR. SERIGNE LAMINE DIOP,  
 THE MINISTRY OF INDUSTRY, AND MR. FALL, THE DIRECTOR OF ENERGY, AND  
 OBTAIN THEIR VIEWS ON HOW THEY WOULD LIKE THE BANK TO PARTICIPATE  
 IN THE PROVISION OF THE FOLLOW UP ASSISTANCE IN ENERGY. YOU MIGHT  
 SUGGEST THAT IN ADDITION TO ONGOING DISCUSSIONS ON FINANCING OF  
 INVESTMENT PROJECTS IN THE SECTOR, THIS COULD INCLUDE (I) DIRECT  
 SUPPORT THROUGH ESMP OF PREFEASIBILITY WORK IN ENERGY CONSERVATION,  
 RENEWABLE ENERGY DEVELOPMENT (PARTICULARLY BAGASSE AND OTHER AGRI-  
 CULTURAL RESIDUES) SOLAR WATER HEATING, ETC., (II) COFINANCING OF  
 LARGER FEASIBILITY OR PILOT PROJECTS IN THESE AREAS WITH CIDA OR  
 OTHER DONORS; AND (III) ADVISORY SUPPORT ON AN AD-HOC BASIS FOR  
 REVIEWING TECHNICAL, ECONOMIC FEASIBILITY OF REPORTS AND PROPOSALS  
 FOR PROJECTS IN THE SECTOR WHETHER OR NOT FINANCED BY THE ESMP OR  
 THE BANK. THANKS FOR YOUR EFFORTS IN THIS MATTER. REGARDS,

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DATE: **OCT. 28, 1983**

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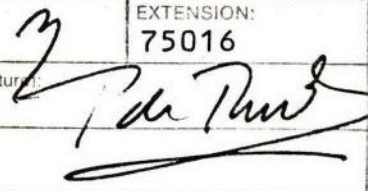
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CLASS OF SERVICE: <b>TELEX</b>		TELEX NO.: <b>962-3149SG</b>	DATE <b>OCT. 28, 1983</b>
SUBJECT: <b>SENEGAL-Energy Assessment</b>		DRAFTED BY: <b>M. Ahmed/mg</b>	EXTENSION: <b>75016</b>
CLEARANCES AND COPY DISTRIBUTION: <b>cc: Bouhaouala, Thiam, Landell-Mills, P. de Raet Bharier, Sigwalt, Wieseman,</b>		AUTHORIZED BY (Name and Signature): 	
		DEPARTMENT: <b>WA2DC</b>	
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PAGE 1 OF 1

OFFICIAL DEPT/DIV ABBREVIATION 74545

MESSAGE NUMBER

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INTBAFRAD, DHAKA. FOR SCHWARTZ. RE YOUR TELEX OF OCTOBER 25. PLEASED TO CONFIRM THAT MESSRS. SCHMEDTJE AND MITCHELL WILL VISIT DHAKA NOVEMBER 16-24 TO PREPARE BRIEF STATUS REPORT ON ENERGY SECTOR DEVELOPMENTS SINCE ASSESSMENT MISSION AND TO DISCUSS WITH GOB A PROGRAM OF FOLLOW UP TECHNICAL ASSISTANCE THAT COULD BE PROVIDED UNDER JOINT UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM. THEY WILL ALSO BE AVAILABLE TO PARTICIPATE, WITH MR. MC CARTHY AND HIS MISSION, IN LCG MEETING IF HELD ON NOVEMBER 17. REGARDS. JULIAN BHARIER.

INTBAFRAD, DHAKA, BANGLADESH. FOR SCHWARTZ.

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CLASS OF SERVICE: <b>TELEX</b>	TELEX NO.: <b>642302 IDA BJ</b>	DATE: <b>10-27-83</b>
SUBJECT:	DRAFTER: <i>[Signature]</i> <b>M. Ahmed:dlw</b>	EXTENSION: <b>74545</b>
CLEARANCES AND COPY DISTRIBUTION: <b>cc: cleared with Mr. Choi (ASA)</b> <b>cc: Mr. Nayyar (EGYD1)</b> <b>Mr. Schmedtje, Mr. Mitchell</b>	AUTHORIZED BY: <i>[Signature]</i> <b>J. Bharier, Chief, EGYEA</b>	
	DEPARTMENT: <b>ENERGY</b>	
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*Extra*

1 2 EGY/EA

2 NORDIC INVESTMENT BANK, FOR MR. BERT LINDSTROM, MANAGING DIRECTOR,  
3 COPY MR. PETER LAURSON, MR. HANS HENRICHSEN AND MS. MARIANNE  
4 THOMPSON.

5 AT OUR MEETING LAST FEBRUARY YOU INDICATED THAT THE NORDIC  
6 INVESTMENT BANK WOULD BE INTERESTED IN PARTICIPATING IN THE  
7 FINANCING OF SOME OF THE PRIORITY INVESTMENT OPPORTUNITIES  
8 IDENTIFIED THROUGH THE JOINT UNDP/WORLD BANK ENERGY ASSESSMENT AND  
9 SECTOR MANAGEMENT PROGRAMS. AS YOU MAY KNOW, I WILL BE VISITING  
10 HELSINKI AGAIN ON DECEMBER FIRST AND SECOND AND I WOULD LIKE TO  
11 TAKE THIS OPPORTUNITY TO FOLLOW UP ON OUR EARLIER DISCUSSIONS BY  
12 PRESENTING SOME SPECIFIC INVESTMENT PROJECTS FOR YOUR  
13 CONSIDERATION.

14 ONE AREA I THINK WILL BE OF PARTICULAR INTEREST TO YOU RELATES TO  
15 THE PROJECTS IDENTIFIED BY A SERIES OF ESMP STUDIES ON  
16 REHABILITATING AND IMPROVING THE EFFICIENCY OF ELECTRIC POWER  
17 SYSTEMS IN DEVELOPING COUNTRIES. THESE STUDIES HAVE BEEN CARRIED  
18 OUT IN ZIMBABWE, PANAMA, SRI LANKA, KENYA AND SUDAN AND IN ALL  
19 CASES THEY HAVE IDENTIFIED SPECIFIC INVESTMENT OPPORTUNITIES  
20 RANGING FROM \$1 MILLION TO \$8 MILLION WHICH HAVE EXTREMELY HIGH  
21 RATES OF RETURN, QUICK PAYBACK PERIODS AND OFFER THE COUNTRIES A

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CLASSIFICATION	TELETYPE	DATE:
SUBJECT	TELEX	EXTENSION: 10-27-83
CLEARANCE AND COPIES DISTRIBUTION	cc:	
APPROVED	M. Ahmed: dw	
AUTHORITY	<i>J. Sharier</i>	
DEPARTMENT	J. Sharier, Chief, EGYEA	
	ENERGY	

2 2 EGY/EA

LOW COST ALTERNATIVE TO EXPANDING POWER SYSTEM CAPACITY AND RELIABILITY. MOREOVER, THESE INVESTMENTS ARE IN A SECTOR WHERE THE NORDIC COUNTRIES HAVE TRADITIONALLY HAD A STRONG MANUFACTURING AND SERVICE EXPERTISE.

AS BACKGROUND INFORMATION FOR OUR MEETING, I AM SENDING YOU TODAY BY COURIER THREE COPIES OF THE POWER SECTOR EFFICIENCY STUDY FOR SRI LANKA WHICH WILL PROVIDE YOU WITH THE DETAILS OF THE PROPOSED INVESTMENTS. I WOULD BE VERY INTERESTED IN HEARING FROM YOU WHETHER THIS TYPE OF PROJECT IS OF INTEREST TO THE NIB AND IF SO WHAT SORT OF MECHANISMS YOU THINK MIGHT BE USED TO BRING ABOUT NIB PARTICIPATION IN THEIR FINANCING. I WILL ALSO BRING WITH ME SOME PROFILES OF PROJECTS IN OTHER ENERGY AREAS WHICH MAY BE OF INTEREST TO YOU EITHER FOR COFINANCING WITH THE ESMP OR FOR DIRECT PARTICIPATION.

FINALLY, I HOPE THAT WE MIGHT ALSO DISCUSS THE POSSIBILITY OF ALLOCATING SOME FUNDS FROM THE NORDIC INVESTMENT FUND TO THE ESMP TO ENABLE US TO PREPARE SIMILAR PROJECTS IN OTHER COUNTRIES WHICH COULD THEN BE FINANCED DIRECTLY BY THE NIB OR OTHER INVESTMENT AGENCIES. I LOOK FORWARD TO OUR MEETING. BEST REGARDS. JULIAN BHARIER, ENERGY DEPARTMENT

END OF TEXT

CLASS OF SERVICE	TELETYPE	DATE
SUBJECT	INITIATED BY	EXTENSION:
1. EGYPTIAN COPY OF THE STUDY	DATE OF SEND BY (Name and Signature)	
	DEPARTMENT:	
	FOR THE DIRECTOR	



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1 1 EGY/EA

UNDEVPRO, PORT-AU-PRINCE, FOR THOMAS. REFERENCE MY TELEX OF OCTOBER 12 REGARDING POSSIBLE TECHNICAL ASSISTANCE UNDER THE UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM. I AM PLEASED TO CONFIRM THAT A MISSION COMPRISING MS. URSULA WEIMPER AND MR. NOEL KING COULD VISIT HAITI NOVEMBER 28 - DECEMBER 3 TO DISCUSS A PROGRAM OF ASSISTANCE UNDER THE ESMP AND TO PREPARE A BRIEF STATUS REPORT ON SECTOR DEVELOPMENTS SINCE THE PREPARATION OF THE ENERGY ASSESSMENT. WOULD BE GRATEFUL FOR YOUR EARLY RESPONSE ON GOVERNMENT ACTION TO THE PROPOSED MISSION TO ENABLE US TO FIRM UP ASSOCIATED TRAVEL PLANS. REGARDS. MASOOD AHMED.

TELEX

10-27-83

M.Ahmed:dlw 74545


cc:

J. Bharier, Chief, EGYEA  
ENERGY

chron file

# OFFICE MEMORANDUM

October 26, 1983

TO: Distribution  
FROM: Julian Bharier   
SUBJECT: Mauritius: Energy Assessment Status Report

I am attaching for your information the final version of the above report which has been prepared under the UNDP/World Bank Energy Sector Management Program. This version takes into account the comments received on the earlier draft circulated on October 4, 1983. Also attached is a covering letter to the Government of Mauritius which emphasizes the importance of taking early action on the staffing of the Government's Energy Policy and Projects Division.

Please address any questions on this report to Masood Ahmed (Ext. 74545).

Dist: Messrs. Gulhati, Sandberg (EANVP)  
Gue, Payson, Schott, Chadwick (EA2)  
Wyss, Bronfman, Shaukat, Nekby (EAP)  
Kohli, Gamba (IND) Alizai, Raghavan, Dixon (CA2)  
Richardson (CDD)  
Rovani, Sadove, Sheehan, Rao, Bourcier, Fish,  
Dosik, Heron, Saunders (EGY)  
Ms. Uluatam (EA2)  
EGYEA staff \*  
Mr. W. Mashler, Mr. B. Harland (UNDP)

M. Ahmed/dw



\*Attachment available  
on request.



October 26, 1983

The Honorable Mr. Mahyendrah Utchanah  
Minister of Energy and Internal Communications  
Port Louis  
Mauritius

Dear Mr. Minister:

I would like to express my appreciation for the courtesies and help extended by yourself and your colleagues to Mr. Masood Ahmed during his recent mission to Mauritius. We have now reviewed the findings of his mission and I would like to follow up on some of the points raised by Mr. Ahmed during his visit.

First of all let me say that we were pleased to learn of the progress that is being made in developing a program to use bagasse more efficiently for the production of electric power. As you know, the Bank is following your country's efforts in this area, with great interest not only because of the major impact that this could have on Mauritius' energy prospects but also because of the applicability of your experience to many other developing countries who also have the potential for using bagasse more efficiently. In this context, we share entirely the importance that you attach to the careful and systematic monitoring of the pilot bagasse pelletization plant and of the dual fired power production project at the FUEL factory. The comparative technical and economic benefits of these two projects will be an essential element in determining the size and content of Mauritius' power sector investment program over the next 10-15 years. It is therefore critical that the experience of the two projects be monitored as closely as possible.

As Mr. Ahmed discussed with you, a successful monitoring and evaluation effort of this nature requires the setting up of a small multidisciplinary team which views this task as one of its primary functions. The Energy Planning and Projects Division of your Ministry has already done some very useful work in this area and, as you are aware, the Bank and the UNDP are supporting these efforts to strengthen the Government's energy policy and management capability through the ongoing technical assistance project. Given the importance of these factors, we are concerned about the delays in the recruitment of a small core of staff to carry out the Division's work. We appreciate your concern regarding the creation of additional public service positions at a time when the Government is rightly focusing on containing public expenditures. However, I am sure you will agree that this is both a high priority task and one where a modest expenditure in ensuring adequate and high quality preinvestment work now will have substantial payoffs in terms of optimizing a much larger investment effort in the energy sector in the future. Moreover, some of the staff required for this work could be seconded from other positions already existing in the public service.

We understand, from Mr. Ahmed's discussions and from the subsequent meetings with the Mauritius delegation which visited Washington in September, that steps are being taken to ensure that the necessary core of staff will be budgeted for in the FY83-84 budget and should therefore be on board by early next year. I would appreciate it if you would let us know of further progress in this regard.

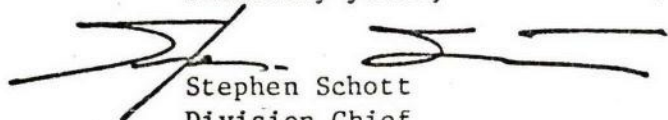
Regarding the question of the ODA funded energy advisor, we understand that the current expectation is that a suitable candidate should be identified shortly and would arrive in Mauritius early next year. Assuming that there are no further delays in the recruitment of the resident advisor, this schedule should enable you to benefit from his presence during the period when the monitoring and evaluation effort, referred to above, is underway. The proposed schedule also provides an additional reason for expediting the recruitment of counterpart local staff for the EPPD so that they can benefit from the advisor's presence in the Ministry from the very beginning.

Finally, let me turn to the Energy Assessment Status Report which was prepared by Mr. Ahmed and discussed with your staff during his visit. Following internal review, this report has now been finalized and I am pleased to enclose a copy for your information. We have also sent fifty additional copies for the Government through the Office of the UNDP Resident Representative in Port Louis. We believe that the report provides a useful and comprehensive picture of recent developments in the sector and of the priorities for future technical and financial assistance by interested donor agencies. We trust that you will find it helpful in your discussions regarding future assistance with the donor community.

I look forward to hearing from you on the points raised above and thank you for your efforts in this matter.

In view of their interest in these matters I am copying this letter to M. Baguant, Financial Secretary; Mr. R. Bheenick, Director, Ministry of Economic Planning and Development, and Mr. H. Danisman, Resident Representative, UNDP.

Sincerely yours,



Stephen Schott  
Division Chief

East Africa Country Programs II.

cc: Mr. M. Baguant, Financial Secretary, Government of Mauritius  
Mr. R. Bheenick, Director, Ministry of Economic Planning &  
Development, Government of Mauritius  
Mr. H. Danisman, Resident Representative, UNDP, Port Louis



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INTBAFRAD, COLOMBO, FOR LATEEF. MANY THANKS YOUR TELEX OCTOBER  
26. WILL WAIT FURTHER WORD FROM YOU ON MISSION CLEARANCE. AS  
FAKHRUDDIN HAS TOLD YOU, PROPOSED TIMING IS NOW WEEK BEGINNING  
DECEMBER 5. REGARDS. MASOOD AHMED. ENERGY DEPARTMENT, WORLDBANK.

-----

INTBAFRAD, COLOMBO, SRI LANKA. FOR LATEEF.

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CLASS OF SERVICE: <b>TELEX</b>	TELEX NO.: <b>954-21410</b>	DATE: <b>10-27-83</b>
SUBJECT:	DRAFTED BY: <b>M. Ahmed:dlw</b>	EXTENSION: <b>74545</b>
CLEARANCES AND COPY DISTRIBUTION:  <b>cc: Mr. F. Ahmed (ASA)</b>	AUTHORIZED BY (Name and Signature): <b>J. Bharier, Chief, EGYEA</b>	
	DEPARTMENT: <b>ENERGY</b>	
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*h.A. Chron fee*

1 2 EGY/EA

NORDIC INVESTMENT BANK, FOR MR. BERT LINDSTROM, MANAGING DIRECTOR,  
COPY MR. PETER LAURSON, MR. HANS HENRICHSEN AND MS. MARIANNE  
THOMPSON.

AT OUR MEETING LAST FEBRUARY YOU INDICATED THAT THE NORDIC  
INVESTMENT BANK WOULD BE INTERESTED IN PARTICIPATING IN THE  
FINANCING OF SOME OF THE PRIORITY INVESTMENT OPPORTUNITIES  
IDENTIFIED THROUGH THE JOINT UNDP/WORLD BANK ENERGY ASSESSMENT AND  
SECTOR MANAGEMENT PROGRAMS. AS YOU MAY KNOW, I WILL BE VISITING  
HELSINKI AGAIN ON DECEMBER FIRST AND SECOND AND I WOULD LIKE TO  
TAKE THIS OPPORTUNITY TO FOLLOW UP ON OUR EARLIER DISCUSSIONS BY  
PRESENTING SOME SPECIFIC INVESTMENT PROJECTS FOR YOUR  
CONSIDERATION.

ONE AREA I THINK WILL BE OF PARTICULAR INTEREST TO YOU RELATES TO  
THE PROJECTS IDENTIFIED BY A SERIES OF ESMP STUDIES ON  
REHABILITATING AND IMPROVING THE EFFICIENCY OF ELECTRIC POWER  
SYSTEMS IN DEVELOPING COUNTRIES. THESE STUDIES HAVE BEEN CARRIED  
OUT IN ZIMBABWE, PANAMA, SRI LANKA, KENYA AND SUDAN AND IN ALL  
CASES THEY HAVE IDENTIFIED SPECIFIC INVESTMENT OPPORTUNITIES  
RANGING FROM \$1 MILLION TO \$8 MILLION WHICH HAVE EXTREMELY HIGH  
RATES OF RETURN, QUICK PAYBACK PERIODS AND OFFER THE COUNTRIES A

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TELEX	DATE
10-27-83	
cc:	M. Ahmed: dw
	J. Bharier, Chief, EGYEA
	ENERGY



LOW COST ALTERNATIVE TO EXPANDING POWER SYSTEM CAPACITY AND RELIABILITY. MOREOVER, THESE INVESTMENTS ARE IN A SECTOR WHERE THE NORDIC COUNTRIES HAVE TRADITIONALLY HAD A STRONG MANUFACTURING AND SERVICE EXPERTISE.

AS BACKGROUND INFORMATION FOR OUR MEETING, I AM SENDING YOU TODAY BY COURIER THREE COPIES OF THE POWER SECTOR EFFICIENCY STUDY FOR SRI LANKA WHICH WILL PROVIDE YOU WITH THE DETAILS OF THE PROPOSED INVESTMENTS. I WOULD BE VERY INTERESTED IN HEARING FROM YOU WHETHER THIS TYPE OF PROJECT IS OF INTEREST TO THE NIB AND IF SO WHAT SORT OF MECHANISMS YOU THINK MIGHT BE USED TO BRING ABOUT NIB PARTICIPATION IN THEIR FINANCING. I WILL ALSO BRING WITH ME SOME PROFILES OF PROJECTS IN OTHER ENERGY AREAS WHICH MAY BE OF INTEREST TO YOU EITHER FOR COFINANCING WITH THE ESMP OR FOR DIRECT PARTICIPATION.

FINALLY, I HOPE THAT WE MIGHT ALSO DISCUSS THE POSSIBILITY OF ALLOCATING SOME FUNDS FROM THE NORDIC INVESTMENT FUND TO THE ESMP TO ENABLE US TO PREPARE SIMILAR PROJECTS IN OTHER COUNTRIES WHICH COULD THEN BE FINANCED DIRECTLY BY THE NIB OR OTHER INVESTMENT AGENCIES. I LOOK FORWARD TO OUR MEETING. BEST REGARDS. JULIAN BHARIER, ENERGY DEPARTMENT

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10/26/83

Julian -

Re: Pakistan - Power Sector Memorandum

The TOR's for this exercise raise a couple of issues.

First, sending a consultant (even one as experienced as Bernard Russell) on a four week mission by himself to carry out this task is unlikely to send the Government the right signals on the importance that the Bank attaches to this work. He should be joined for at least part of his trip by a staff member from the regional energy division.

Second, it is improbable that one person will be able to obtain all the information necessary to achieve the objectives spelt out in para 1 of the TOR's. This is particularly so in a country like Pakistan where the power sector is large and complex and there are a number of fuel substitution issues that need to be addressed.

Third, there appears to be no plan to discuss the results of this work with the Government or Wapda. Nor is it clear what internal review process will be followed.

Masood Ahmed

A handwritten signature in black ink, consisting of a stylized 'M' inside a circle with a tail stroke extending to the right.



October 25, 1983

Mr. A. Bruce Harland  
Deputy Assistant Administrator and  
Director, Energy Office  
UNDP  
New York

Re: Renewable Energy Project Proposals

Dear Bruce:

At our meeting of October 7, we discussed the possibility of obtaining funding for three or so renewable energy projects costing approximately \$200,000 each, from some funds already allocated by the Japanese Government to the UN for projects of this nature. To follow up on that possibility we are enclosing four preliminary project profiles for your review and comments. These projects, which have been selected from the larger portfolio of renewable energy projects based upon our assessment and sector management work, are as follows:

Project

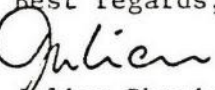
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| (i)   | Groundnut Shell Utilization Project<br>for Senegal  | \$200,000 |
| (ii)  | Agricultural Residue Utilization Pilot Project<br>and Investment Study for Ethiopia                             | \$200,000 |
| (iii) | Rural Industry Energy Efficiency Project<br>for Sri Lanka   | \$140,000 |
| (iv)  | Heat Gasifier Monitoring & Demonstration Project<br>(extension of ongoing power gasifier monitoring<br>project) | \$400,000 |

As you will note, the common thread running through these projects is the focus on promoting the commercialization of technically well proven and economically promising renewable energy applications. Moreover, in line with the general thrust of the work being carried out under the ESMP, these projects should also lead to the identification of larger investment programs which could be financed by other private or public investors. In this context, I am sure you will be pleased to learn that the \$350,000 pilot project identified by the ESMP prefeasibility study on improving the efficiency of wood use in the tobacco curing industry in Malawi has already been picked up under a Bank financed project to be approved shortly.

Once you have reviewed these proposals, we would be happy to meet with you to resolve any queries and to provide any further details you might require on their background justification and costing.

As we discussed, the projects would be implemented under the Energy Sector Management Program although we would provide separate budgetary or other reports if required.

I look forward to hearing from you.

Best regards,  
  
Julian Bharier  
Division Chief

Enclosures

cc: Mr. W. Mashler  
Senior Director  
Division for Global and Interregional Projects  
UNDP

bcc. Messrs. Rao, Dosik, Fish, Wackman, Floor, Newcomb,  
Jordan (EA2), Ahmed (ASA), de Raet (WA2)

M.Ahmed/dw



Senegal: Groundnut Shell Utilization Project

Background

More than half of Senegal's oil imports are needed for electricity production, which is a heavy burden for the economy. The government of Senegal, therefore, wishes to diminish its dependence on oil imports through inter alia a more efficient use of the present installed capacity, better planning of distribution and increased use of indigenous resources. To that end a master plan for the electricity sector is being established which also will deal with rural electrification. It is envisaged that this master plan will not only consider the classical options for rural electrification (interconnected grid, decentralized diesel stations) but will also look at alternative solutions to satisfy rural energy needs. One of the possible resources which may be used is groundnut shells of which in 1982 an energy potential of some 80,000 TOE was available. part of this energy source is being used for heat and electricity generation by the oil plants, but a large quantity is not used at all. Groundnut shells might either be used as a feed stock for gasifiers producing power, or in densified solid form as energy for domestic households. However, the precise size of the groundnut surplus and its possible end use needs further study.

Project Proposal

This project has two objectives. First it will make a detailed study of the energy production and utilization in the two largest groundnut-oil mills and on the basis of this study define the economics of additional power production through utilization of their existing groundnut shell surplus as well as through energy savings in the mills themselves. Secondly, more generally, at the national level the project will establish the size, location, and seasonal fluctuation of the supply of groundnut shells surplus. It will, furthermore, make a detailed economic analysis of the possible end use of this surplus. In particular, attention will be paid to power gasification and briquetting for household use. The project will also review the markets for these forms of energy. The project will also make a detailed design of an investment package incorporating a financing plan and an operational strategy for installation, operation and maintenance of the proposed technology (ies). This may entail a phased approach focussing on a pilot project before embarking on a full scale programme. Finally, the project will assess the feasibility of local manufacturing as well as identify training requirements for installation, operation and maintenance, and the most appropriate role of the government with regard to these issues.

Schedule and Costs

The project will take about 12 months to complete after the selection of consultants and will require input from at least three specialists for varying periods. The total project cost is expected to be about \$200,000 including supervision by ESMP staff. Detailed terms of reference and a breakdown of project costs can be provided if necessary.



Joint UN/World Bank  
Energy Sector Management Program

Preliminary Project Profile

ETHIOPIA: Crop Residue Briquetting Feasibility Project

Background

The fuelwood resource is so diminished in many of the Sudano Sahelian zone countries that market prices of firewood have risen to between US\$75-US\$100 per tonne and much inferior fuels such as sorghum and corn stalks and dung are commonly traded. In these markets, more highly processed fuels, such as briquettes of various lignocellulosic crop wastes, which were previously too expensive to consider, appear now to be competitive. Briquetting is a process whereby dry, fine lignocellulosic residues are compressed at very high pressures forming small logs, discs or pellets of basic density in excess of 1,000 kg/m<sup>3</sup>. The lignins in these materials become the "binder" at the temperatures and pressures created in the required heavy duty presses. Some durable and relatively expensive briquetting equipment has been available commercially since the 1950s though now numerous varieties and sizes of similar equipment are marketed. Production units ranging from several hundred to tens of thousand of tonnes of briquettes per year are in use in India, Thailand, Kenya, Niger and elsewhere in Africa there are plants under trail, such as in the Gambia and in South African dependencies. The same equipment is quite commonly in commercial use in wood-working or fibrous crop processing plants in North America, Western Europe, Japan and Australia. In Japan, it has long been common to briquette sawdust which is then carbonised to produce high quality charcoal briquettes for industrial and household use. Wherever agricultural crop wastes are available in a dry (5-15 percent moisture by weight) and finely divided form (less than 2-4 cm), or can be comminuted cheaply, there is a possibility that industrial and household fuels can be produced and sold competitively.

During the course of the recent Ethiopian energy assessment, several crop residues were evaluated as prospective household and industrial fuels and found to be very worthy of pilot production, or more detailed engineering, logistical and economic analysis. These included coffee husks, and the state farm crop residues of cotton stalks, corn and sorghum stover and wheat straw. Of these, the potential for briquetting coffee husks appears to be most immediately realizable because of the concentrated availability of this residue in relatively large coffee processing mills who currently burn off the husks as a means of disposal to avoid the danger of spontaneous combustion.

In terms of marketability, the use of residue briquettes for household cooking is only at the pilot stage with consumer acceptance to be established in the field in parallel with pilot fuel production for each cooking appliance and method. Surveys in the Gambia found consumers



to be prepared to use these fuels if the price was right, though problems of smoking and ignition were experienced with briquettes in open fires. However, if consumer acceptance in the household sector proves a major constraint, these briquettes can be used without difficulty by industrial users of wood and charcoal. They could also be carbonized and substituted for charcoal as a household fuel.

#### Specific Project Proposal, Cost and Timing

This project provides for the installation and monitoring of two briquetting presses, of 1,000-2,000 tonnes per year capacity each, to process coffee husks, and to evaluate the use of briquettes as a household and industrial fuel in Addis Abeba, Ethiopia. One plant will be installed in Addis Abeba, and the other in Dila, 360 km away. The combined cost of hardware, installation and monitoring is about US\$100,000. Pilot production and evaluation of briquetted fuel use could begin six months after the commitment of funds. While the household sector will provide the larger ultimate market for this fuel, the production from the pilot project could also be used in the currently wood fueled boiler plant in Addis Abeba. Thus the pilot project would be assured of a ready market even if a larger subsequent program were decided against. The second component of the project will be to fund a detailed feasibility study of the optimum technical package for harvesting, storing and processing cotton, corn and wheat crop residues in Ethiopia leading to the design, costing and preliminary economic analysis of a major pilot program of commercial fuel briquette production in each case. This activity should also cost about US\$100,000. Preliminary economic analyses and a detailed budget for this project are available on request.

Sri Lanka Rural Industry Energy Efficiency Project

Background

Given the present trend of fuelwood consumption in Sri Lanka, it is expected that the natural forest cover will be completely denuded in about 30 years. Long before then localized fuelwood shortages will emerge with important social, environmental and economic implications. Furthermore, reduced fuelwood availability will inevitably lead to some increase in commercial energy demand, which will have important consequences for the import bill of Sri Lanka. Industry accounts for 25% of total fuelwood consumption and for a considerable amount of oil consumption. It is expected that through improved efficiency of processing techniques about 30-40% savings in the consumption of fuelwood (and oil products) can be achieved. At the moment little is known about the technologies used in these industries (mainly tea drying, brick making and copra processing) which need to be identified in order to establish the most appropriate technology package to realize the possible energy savings.

Project Proposal

This project will further define the prospect for upgrading energy efficiency in rural industries such as tea drying, brick making and copra processing as identified by the energy assessment. The project will make an inventory of the various technologies used in these industries on the basis of which it will formulate detailed proposals with regards to designs and technologies which will result in considerable energy savings. The project will in this connection inter alia pay special attention to the possible use of heat gasifiers and will provide a detailed study of the economics of the energy saving technologies. Finally, the project will identify the most appropriate role of government both with regard to investment and institutional requirements such as training.

Schedule and Costs

The project will approximately take 12 months to complete after the selection of consultants and will require inputs from at least three specialists for varying periods. The total cost is expected to be about \$140,000 including supervision by ESMP staff. Detailed terms of reference and a breakdown of project costs can be provided if necessary.

EGYEA/WF/October 1983



Biomass Gasifier Monitoring Program

Preliminary Project Profile for  
Demonstration and Monitoring of Heat Gasifiers

Background

The United Nations Development Programme (UNDP) initiated funding in May 1983 for a three year project to monitor and compile uniform global data on the performance, reliability, economics, safety and public acceptability of biomass gasifiers that are applicable to developing countries. The project is being executed by the Energy Department of the World Bank.

The first phase of the project, which is currently funded, is focused on power gasifiers (i.e., for fueling internal combustion engines for shaft power) in Brazil and the Philippines. In the second phase of the project, monitoring would be extended to the South Pacific and biomass heat gasifiers would be included. These are gasifiers specially designed to displace liquid and gaseous fuels used in industrial and commercial applications for the production of heat (i.e., in boilers, kilns, driers, burners). The potential liquid fuel savings from the use of heat gasifiers is great.

Interest in heat gasifiers is increasing steadily in many developing countries especially in the South Pacific (Papua New Guinea and Fiji), South East Asia (Philippines, Indonesia and Thailand), and South Asia (India and Sri Lanka). However, like power gasifiers, there is little reliable information on the performance of heat gasifiers and no standards to guide their successful wide scale application.

Proposal

Heat gasifiers currently operating on a commercial basis in Brazil and the South Pacific (Papua New Guinea and Fiji) would be monitored in the second phase of the UNDP project. The focus of the monitoring program will be to establish reliable field operating data on the technical and economic performance of heat gasifiers. The estimated costs for conducting this monitoring program for one year is \$150,000.

In view of the growing interest in heat gasifiers, it is now proposed that the second phase of the project be expanded to include demonstration activities in countries like the Philippines and/or Sri Lanka. In both these countries there is increasing interest in heat gasifiers in both the public and private sectors. However, there are no heat gasifiers operating in the country and the consequent lack of experience, information and knowledge has been a major hinderance to the introduction of the technology. It is recommended that the demonstration activities consist of the installation and intensive monitoring and evaluation of 4-5 carefully selected gasifiers representing the types and sizes of equipment most appropriate for the country(s). The demonstration sites would also be carefully chosen from among the industries which seem to offer the greatest potential for the commercial application of heat gasifiers, and the full

approximately 25 percent of utility enterprises would be enlisted. The estimated cost for two years is \$200,000.

Thus the total cost of this project is \$400,000.

MMendis/RDosik  
10/25/83



*chron.*

1 2 7-2781

MR. DAVID JOHANSSON, ASSISTANT DIRECTOR, MINISTRY OF FOREIGN AFFAIRS, HELSINKI, FINLAND. RE CAPCO LOAD DISPATCH STUDY. MANY THANKS YOUR TELEX OF OCTOBER 10 CONFIRMING FINNIDA'S INTEREST IN FINANCING THE ABOVE STUDY. WE DO NOT FORESEE ANY DIFFICULTIES IN IDENTIFYING SUITABLY QUALIFIED FINNISH CONSULTANTS TO CARRY OUT THE WORK. ALSO, AS REQUESTED IN YOUR TELEX, WE WILL BE HAPPY TO PROVIDE TECHNICAL SUPPORT AND SUPERVISION OF THIS WORK BY ESMP STAFF. THIS WOULD INCLUDE PREPARING DRAFT TERMS OF REFERENCE FOR THE STUDY, ASSIST IN REVIEWING CONSULTANT QUALIFICATIONS, REVIEWING DRAFT AND FINAL REPORTS, AND PARTICIPATING IN SUBSEQUENT DISCUSSIONS WITH CAPCO AUTHORITIES AS REQUIRED. HOWEVER, WE WOULD SUGGEST THAT THE ACTUAL CONTRACTING OF THE CONSULTANTS AND THEIR ADMINISTRATIVE SUPERVISION BE HANDLED DIRECTLY BY FINNIDA. THIS WOULD BE ADMINISTRATIVELY SIMPLER AND QUICKER THAN THE MECHANISM OF FINNIDA CONTRIBUTING TO THE ESMP FOR THIS PARTICULAR STUDY AND IT WOULD ALSO PREEMPT ANY PROBLEMS WITHIN OUR ORGANIZATION OF RESTRICTING THE PROCUREMENT ONLY TO FINNISH CONSULTANTS. REGARDING THE CURRENT STATUS OF THE STUDY ITSELF, THE BILATERAL COMMISSION HAS JUST COMPLETED ITS SECOND MEETING IN ZIMBABWE LAST WEEK. THIS MEETING SHOULD PROVIDE FURTHER SPECIFICS ON THE SCOPE AND FOCUS OF THE PROPOSED STUDY AS WELL AS ON ITS APPROPRIATE

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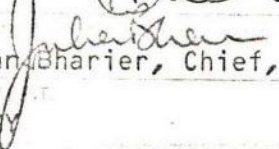
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TIMING. WE ARE NOW WAITING TO HEAR RESULTS OF THE MEETING FROM  
MR. DAMRY, THE CHAIRMAN OF THE COMMISSION, AND WILL REVERT TO YOU  
IN EARLY NOVEMBER WITH FURTHER DETAILS AND A DRAFT TERMS OF  
REFERENCE. BEST REGARDS, JULIAN BHARIER, ENERGY DEPARTMENT,  
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MR. E. FOSSATI, HEAD OF DIVISION, COMEUR, BRUSSELS, BELGIUM.

YOUR REFERENCE VIII/D/3223441. (AAA) MANY THANKS URTELEX OF

OCTOBER 21 CONFIRMING EEC INTEREST IN PARTICIPATING IN TECHNICAL

ASSISTANCE ACTIVITIES IDENTIFIED THROUGH ENERGY ASSESSMENT AND

SECTOR MANAGEMENT PROGRAMS. WE WILL SHORTLY SEND YOU SOME SPECI-

FIC PROJECT PROPOSALS FOR YOUR CONSIDERATION AND ONCE YOU HAVE HAD

A CHANCE TO REVIEW THESE PROPOSALS MY STAFF WILL BE HAPPY TO VISIT

BRUSSELS TO PROVIDE ADDITIONAL DETAILS AND CLARIFICATIONS. (BBB)

REGARDING ADMINISTRATIVE ASPECTS, WE FORESEE NO DIFFICULTY IN

ADOPTING THE COFINANCING MECHANISM YOU HAVE PROPOSED AND WE ARE

CONFIDENT THAT SUITABLY QUALIFIED CONSULTANTS WHO ALSO MEET EEC

GUIDELINES CAN BE IDENTIFIED FOR THESE PROJECTS. WE WOULD BE

WILLING TO PROVIDE TECHNICAL SUPERVISION OF THESE CONSULTANTS

(INCLUDING DRAWING UP OF TORS, REVIEW OF CONSULTANT QUALIFICATIONS,

FIELD SUPERVISION, REVIEW OF REPORTS PRODUCED, ETC.). HOWEVER,

OUR PREFERENCE WOULD BE THAT THE ACTUAL CONTRACTING OF THESE

CONSULTANTS AND THEIR ADMINISTRATIVE SUPERVISION BE DONE DIRECTLY

BY YOUR ORGANIZATION. PLEASE LET US KNOW IF THIS ARRANGEMENT IS

LIKELY TO POSE ANY DIFFICULTIES FOR YOU. WE WOULD ALSO BE GRATE-

FUL IF YOU COULD CONFIRM THAT CONSULTANTS ELIGIBLE UNDER EEC

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GUIDELINES INCLUDE NOT ONLY EEC MEMBERS BUT ALSO ACP AND  
DEVELOPING COUNTRIES AS WELL. KIND REGARDS, JULIAN BHARIER, CHIEF  
ASSESSMENTS DIVISION, ENERGY DEPARTMENT, WORLDBANK

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INFORMATION BELOW NOT TO BE TRANSMITTED

CLASS OF SERVICE: **TELEX**                      TELEX NO.: **21877 COMEU B**                      DATE: **Oct. 25/83**

SUBJECT: **ESMP - Gen.**                      DRAFTED BY: **MAhmed:ks**                      EXTENSION: **7-4545**

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

DEPARTMENT:  
**ENERGY**

**SECTION BELOW FOR USE OF CABLE SECTION**  
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Consultants from ACP (dev. countr)?  
How much for each country?  
2 p. 19

by wire.

10/21  
Julian - let's  
discuss  
Maxood

ZCZC DIST0939 WUI9117

DIST

WHEN REPLYING TO THIS MESSAGE REFER TO : TCP FCA  
EGYEA

21877 COMEU B  
218877 COMEU B

DE : C.C.E. BRUXELLES - TLX1 - SERVICE TELEX  
A : INBAFRAD WORLD BANK - WASHINGTON  
REF: 08:36 21-10-83 000175587 - 000176101

TELEX N. 175809-VIII

444098 WORLD BANK, WASHINGTON D.C., U.S.A.  
ATTN: DR. JULIAN BHARIER, CHIEF OF ENERGY ASSESSMENTS DIVISION

OUREF: VIII/D/3/23441

SUBJECT: FEASIBILITY STUDIES FOR ENERGY PROJECTS IN RURAL AREAS  
OF NON-ASSOCIATED DEVELOPING COUNTRIES.

FURTHER TO YOUR DISCUSSION WITH MR. DA CAMARA FROM MY DIVISION, ON  
OCTOBER 12TH, I AM PLEASED TO CONFIRM OUR INTEREST IN  
JOINING EFFORTS WITH THE WORLD BANK AND UNDP FOR COFINANCING  
TECHNICAL COOPERATION ACTIVITIES RELATED TO THE FOLLOW-UP OF  
YOUR ENERGY ASSESSMENT AND ENERGY MANAGEMENT PROGRAMMES.  
THE TYPE OF ACTIVITIES THAT COULD BE OF COMMON INTEREST WOULD BE  
FEASIBILITY STUDIES FOR RURAL-DEVELOPMENT/ENERGY PROJECTS IN  
COUNTRIES SUCH AS BANGLADESH, BOLIVIA, HAITI, INDONESIA, NEPAL,  
PERU, SRI LANKA.

A FINAL DECISION CAN ONLY BE TAKEN CASE BY CASE, ON THE BASIS OF  
A SPECIFIC PROJECT/STUDY PROPOSAL, FURTHERMORE, THESE DETAILED  
PROPOSALS ARE NECESSARY TO DECIDE FROM WHICH BUDGETARY LINE EACH  
SPECIFIC ACTION COULD BE FINANCED.

WE HAVE A STRONG PREFERENCE FOR COFINANCING WITH YOU (AND/OR  
UNDP) EACH ONE OF THE ENVISAGED TECHNICAL COOPERATION ACTIONS,  
EVEN MORE SO AS IT WOULD BE DIFFICULT FOR US TO FINANCE  
PERSONNEL EXPENSES FOR THE UNDP STAFF ALREADY WORKING WITHIN YOUR  
DIVISION. I THEREFORE SUGGEST COFINANCING ARRANGEMENTS WHICH  
LEAVE THAT PART OF THE COSTS OUTSIDE OF THE EEC CONTRIBUTION. IN  
ADDITION, OUR GUIDELINES ON THE ORIGIN OF GOODS AND SERVICES WOULD  
HAVE TO BE FOLLOWED (I.E. THE CONSULTANTS SHALL BE FROM EEC  
MEMBER COUNTRIES).  
WITH KIND REGARDS

E. FOSSATI  
HEAD OF DIVISION  
COMEUR/

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NNNN

By administrative  
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Mr. Pierini

incl. ACP

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OFFICIAL DEPT/DIV  
ABBREVIATION  
EGY/EGYEA

MESSAGE NUMBER

TEST NUMBER  
(FOR CASHIER'S USE ONLY)

START  
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MR. ZIAD ALAHDAD (WORLD BANK STAFF), TRAVELODGE, PORT MORESBY,  
PAPUA NEW GUINEA. THANKS YOUR TELEX. SPOKE WITH PRASAD WHO IS  
ARRIVING PORT MORESBY ON SUNDAY MORNING. UNDERSTAND FROM TRAVEL  
OFFICE THAT THEY APPROACHED TRAVELODGE YESTERDAY FOR PRASAD'D  
HOTEL BOOKING AND ARE AWAITING CONFIRMATION. WILL APPRECIATE ANY  
ASSISTANCE YOU CAN RENDER IN SECURING HOTEL BOOKING. THANKS AND  
REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLD BANK.

END  
OF  
TEXT

PINK AREA TO BE LEFT BLANK AT ALL TIMES

INFORMATION BELOW NOT TO BE TRANSMITTED

CLASS OF SERVICE: <b>Telex</b>		TELEX NO.: <b>TRAVEEX NE22248</b>	DATE: <b>10.21.83</b>
SUBJECT: <b>PNG: ESMP</b>	DRAFTED BY: <b>MAhmed:jl</b>		EXTENSION: <b>74545</b>
CLEARANCES AND COPY DISTRIBUTION:  <b>cc: Ms. Owen (EGYEA)</b>	AUTHORIZED BY (Name and Signature): <b>Harold Wackman, Acting Chief, EGYEA</b>		
	DEPARTMENT: <b>Energy</b>		
	SECTION BELOW FOR USE OF CABLE SECTION CHECKED FOR DISPATCH		



① J.B info.

② MA

③ Rowen

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DIST1148 JWS8500  
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WHEN REPLYING TO THIS MESSAGE REFER TO : TCP FCA  
EGYEA

ZC JWS0723 JIS437 IN 21/07:21 OUT 21/07:23

TRAVLEX NE22248

TRAVLEX NE22248  
TO WORLD BANK WASHINGTON DC.  
ITT 44008

MESSAGE.  
URGENT FOR MASOOD AHMED EGYEA:  
PLEASE ENQUIRE FROM REQUEL AND ADVISE BY RETURN TELEX PRECISE  
ITINERARY OF PRASAD. HE HAS NO RESERVATION AT TRAVELODGE,  
GATEWAY, DAVARA OR BOROKO HOTELS.  
REGARDS, ZIAD ALAHADAD.

TRAVLEX NE22248

TRAVLEX NE22248

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NNNN

*Prasad -  
Hyderabad*

*Direct Dialing  
0-11-91-842-33915*

## OFFICE MEMORANDUM

October 20, 1983

TO: Julian Bharier

FROM: H. Messenger

SUBJECT: Malawi - Technical Assistance Supervision - Tobacco Industry  
Energy Efficiency Component

1. As you know, the Technical Assistance Credit associated with SAL II includes a pilot project to improve the efficiency of energy use in the tobacco industry. This component was identified and prepared by your staff under the Energy Sector Management Program.
2. We would now like your division to also take the responsibility for supervising the implementation of this component. The regions agriculture and forestry staff have agreed to provide you with technical support for this work but are unable to take primary supervision responsibility because of other commitments.
3. The resource requirements for effective supervision of this program have been estimated by regional projects, programs and your own staff as 8 SW in FY84 and 15 SW each in FY85 and FY86. We expect that you would request these resources in your FY85-86 budget submission and will support such a request to PAB. As you know we have already agreed to similar arrangements regarding the supervision of the energy sector institutional strengthening component of the same TA operation.
4. I would be grateful for your early response to this matter as the Government and ourselves would like the first post appraisal/supervision mission to go out in mid November 1983.

cc: Messrs. Kraske, Bronfman, Rao (EGY)  
Ahmed (EGY)

P. Hall/dlw





# Record Removal Notice

<b>File Title</b> Masood Ahmed - Chronological File - July to December 1983		<b>Barcode No.</b>  1540558		
<b>Document Date</b> 10/19/1983	<b>Document Type</b> Memorandum			
<b>Correspondents / Participants</b> To: Hans Mehlretter From: Masood Ahmed				
<b>Subject / Title</b> Mr. S. Mozumder - Energy Planner Candidate				
<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. David Hopper

*Chron*

David -

Re: Nepal: Renewable Energy Project.

1. We talked about the need to improve the Bank's image in the renewables energy area by embarking on a few viable and worthwhile free standing projects of this sort.
2. The Nepal project, identified through the Energy Assessment mission, is ideal to start off this process: It makes technical and economic sense, has a priority in the Nepalese context, and we should be able to attract substantial cofinancing for it from bilaterals or ADB.
3. My staff have discussed the possibility of including it in the lending program with the programs division and been told that while the project itself is sound and worthwhile it cannot be included because of (what I find to be quite extraneous) country reasons (See attached note). I think it would be a shame to miss this opportunity.
4. Can you help?

Yves



Mr. Ahmed

October 13, 1983

Mr. Rovani:

Nepal: Renewable Energy Project

Messrs. Terrado, Zinman and I met yesterday with Mr. Tsantis, the Programs Division Chief, and members of his staff, to discuss the initial project brief we prepared for the proposed free-standing project. No questions were raised about the project itself; it seemed to be accepted as a worthy follow-up to the Assessment in a critical area. Rather, Programs took the position that the project could not be considered for inclusion in the lending program at the present time for a number of reasons related to broad country and sector policy. The reasons cited included:

- (1) Country strategy is presently under review--a seminar, to which EGY is invited, is to be held next week. *We should go to push for completion.*
- (2) There are serious unresolved financing problems with the hydro project Bank is presently considering--a co-financiers' meeting is to be held shortly. *Irrelevant.*
- (3) There must be prior agreement with the Government on broad energy strategy and policy issues, including power tariffs--Messrs. Wiehen and Tsantis are to visit Nepal shortly. *Equally irrelevant.*
- (4) Agreement on energy sector activities must also be reached with the Asian Development Bank and other donors--a consultative group meeting is to be held in December. *Meeting is ideal for co-financing.*

I suspect Programs' attitude was also colored by the fact, just mentioned at the meeting, that they are not in need of additional projects since the FY85 and FY86 lending programs are already over-committed.

I could do little more than express my disappointment at learning that Programs is unwilling to proceed with the project we have proposed until everything else in the sector falls into place. I did, however, urge Mr. Tsantis to at least use the upcoming opportunities to informally sound out to both the Government and other donors concerning their possible interest in the project. He indicated that he will try to do so and that we could take up the matter again at the end of the year when the situation should be more clear following the above-mentioned meetings.

I am bringing this to your attention in view of your interest in free-standing renewables projects and in this one in particular. You mentioned earlier that you might want to discuss matters like this with David Hopper. In the light of my experience with the Programs people, it appears that some such initiative is required to get things moving.


R.S.  Josik

cc: Messrs. Sheehan, Sadove, Ahmed, Terrado, Zinman (EGY)  
Ms. Kraske (EGY)

Chowdhury

## OFFICE MEMORANDUM

October 18, 1983

TO: EGYEA Staff  
FROM: Julian Bharier   
SUBJECT: Time Recording for ESMP

1. The recent growth of ESMP operations introduces an added dimension to our divisional time recording procedures. It is important that the time spent by divisional staff and consultants on any activities financed under the ESMP be clearly and accurately recorded in their monthly time sheets. This will ensure that:

- (i) the cost of each individual activity under the ESMP is accurately defined and monitored; and
- (ii) the time spent by staff hired under a particular budget working on activities covered under a different budget is accurately reflected in inter-budgetary reallocations which we will need to make periodically.

2. Attached please find a list of codes for each activity currently being carried out under the ESMP. I would be grateful if you could use these codes for recording any time spent on ESMP activities beginning with the monthly time sheet for October. The list will be amended as existing activities are completed or new ones added for the Program.

3. Any questions on this should be directed to Masood Ahmed or Raquel Owen.

cleared with Ms. Dennaro (PAB)

cc. Mr. Rao  
Mr. Kalim  
Mrs. Lewis

M.Ahmed:dw





# OFFICE MEMORANDUM

October 18, 1983

TO: Ms. Connie Dennaro, PAB  
FROM: Julian Bharier  
SUBJECT: Time Recording Codes for the ESMP

1. Attached please find a copy of the memorandum you discussed with Ms. Owen.
2. We would appreciate your creating two new activity and sub activity codes TAS SMP and MAA SMP to be used as set out in the attached memo.
3. It would be very helpful if these new codes could be inserted in the computer in time for recording of the October timesheets.

cc: Ms. Owen ✓  
Mrs. Lewis

R.P. Owen/dw ✓

Energy Sector Management Program

Time Recording Codes

<u>Country</u>	<u>Project</u>	<u>TRS Code</u>		
Bangladesh	Energy Assessment Status Report	TAS	SMP	8BANGGØT1
	Priority Investment Program for Energy	TAS	SMP	8BANGGØT2
Burundi	Energy Assessment Status Report	TAS	SMP	2BUIGGØT1
	Assistance for Developing Petroleum Exploration Strategy	TAS	SMP	2BUIGGØT2
	Assistance for Petroleum Supply Management	TAS	SMP	2BUIGGØT3
Haiti	Energy Assessment Status Report	TAS	SMP	6HAIGGØT1
Indonesia	Energy Assessment Status Report	TAS	SMP	7INSGGØT1
Kenya	Energy Assessment Status Report	TAS	SMP	2KENGGØT1
	Advice and Support for Implementation of Solar Water Heating Project	TAS	SMP	2KENGGØT2
	Preparation of Coal Import Action Plan	TAS	SMP	2KENGGØT3
	Power Sector Efficiency Audit	TAS	SMP	2KENGGØT4
Malawi	Energy Assessment Status Report	TAS	SMP	2MALGGØT1
	Tobacco Industrial Efficiency Program Preparation	TAS	SMP	2MALGGØT2
	Institutional Review and Identification of Technical Assistance Requirements for Energy Planning	TAS	SMP	2MALGGØT3
Mauritius	Energy Assessment Status Report	TAS	SMP	2MTSGGØT1
Panama	Power Sector Efficiency Audit	TAS	SMP	6PANGGØT2
Papua New Guinea	Energy Assessment Status Report	TAS	SMP	7PAPGGØT1
	Institutional Review and Identification of Technical Assistance Requirements	TAS	SMP	7PAPGGØT2
	Advice on Electricity Tariffs and Regulations for Auto-Generation	TAS	SMP	7PAPGGØT3



<u>Country</u>	<u>Project</u>	<u>TRS Code</u>		
Rwanda	Energy Assessment Status Report	TAS	SMP	2RWAGGØT1
Sri Lanka	Energy Assessment Status Report	TAS	SMP	8SRIGGØT1
	Power Sector Efficiency Audit	TAS	SMP	8SRIGGØT2
Sudan	Power Sector Efficiency Audit	TAS	SMP	2SUDGGØT2
	Management Assistance to the Ministry of Energy and Mining	TAS	SMP	2SUDGGØT3
Uganda	Advice on Petroleum Import Arrangements	TAS	SMP	2UANGGØT2
Zambia	Energy Assessment Status Report	TAS	SMP	2ZAMGGØT1
Zimbabwe	Energy Assessment Status Report	TAS	SMP	2ZIMGGØT1
	Power Sector Efficiency Audit	TAS	SMP	2ZIMGGØT2
	Capco: Support to bilateral commission reviewing future role and functions	TAS	SMP	2ZIMGGØT3
General	ESMP (Non activity specific)	TAS	SMP	1WLDGGUN3
Management	ESMP	MAA	SMP	--

Note: Time spent on review of specific activities should be recorded under that activity.

M.Ahmed/dlw  
10/3/83

Chuan file

# OFFICE MEMORANDUM

October 18, 1983

TO: Ms. Aynur Uluatam Sumer, Sr. Economist, EA2DA  
Mr. Gunter Schramm, Sr. Economist, EAPEG

FROM: Masood Ahmed, Sr. Economist, EGYEA 

SUBJECT: MAURITIUS: Energy Assessment Status Report

1. Thank you for your useful comments on the draft of the above report, which we will incorporate in the final version. Specifically, we have indicated in Part III (B) the priority attached to the various outstanding recommendations of the assessment and expanded the scope of the follow up technical assistance in V (ii) to explicitly cover large transport users. We have also clarified the text relating to the current staffing position of the EPPD and to the expected arrival of the ODA funded energy advisor. Regarding Mr. Schramm's more general comments on the comparative economics of bagasse based electricity generation, some of these points will of course be cleared up through the monitoring of the proposed pilot projects described in the report. However, based on the evidence that we have to date, the potential for bagasse based power generation continues to appear to be both substantial and highly economic. Following the above revisions, we will proceed to finalize the above report for distribution under the ESMP.

2. In the meantime we would be grateful for your comments and clearance of the attached draft letter to the Government which would be sent with the final version of the Assessment Status Report.

cc: Messrs. Gulhati, Bronfman, Schott, Shaukat,  
Sandberg, Bharier, Wackman



**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

October 18, 1983

DRAFT

The Honorable Mr. Mahyendrah Utchanah  
Minister of Energy and Internal Communications  
Port Louis  
Mauritius

Dear Mr. Minister:

I would like to express my appreciation for the courtesies and help extended by yourself and your colleagues to Mr. Masood Ahmed during his recent mission to Mauritius. We have now reviewed the findings of his mission and I would like to follow up on some of the points raised by Mr. Ahmed during his visit.

First of all let me say that we were pleased to learn of the progress that is being made in developing a program to use bagasse more efficiently for the production of electric power. As you know, the Bank is following your country's efforts in this area, with great interest not only because of the major impact that this could have on Mauritius' energy prospects but also because of the applicability of your experience to many other developing countries who also have the potential for using bagasse more efficiently. In this context, we share entirely the importance that you attach to the careful and systematic monitoring of the pilot bagasse pelletization plant and of the dual fired power production project at the FUEL factory. The comparative technical and economic benefits of these two projects will be an essential element in determining the size and content of Mauritius' power sector investment program over the next 10-15 years. It is therefore critical that the experience of the two projects be monitored as closely as possible.

As Mr. Ahmed discussed with you, a successful monitoring and evaluation effort of this nature requires the setting up of a small multidisciplinary team which views this task as one of its primary functions. The Energy Planning and Projects Division of your Ministry has already done some very useful work in this area and, as you are aware, the Bank and the UNDP are supporting these efforts to strengthen the Government's energy policy and management capability through the ongoing technical assistance project. Given the importance of these factors, we are concerned about the delays in the recruitment of a small core of staff to carry out the Division's work. We appreciate your concern regarding the creation of additional public service positions at a time when the Government is rightly focusing on containing public expenditures. However, I am sure you will agree that this is both a high priority task and one where a modest expenditure in ensuring adequate and high quality preinvestment work now will have substantial payoffs in terms of optimizing a much larger investment effort in the energy sector in the future. Moreover, some of the staff required for this work could be seconded from other positions already existing in the public service.

We understand, from Mr. Ahmed's discussions and from the subsequent meetings with the Mauritius delegation which visited Washington in September, that steps are being taken to ensure that the necessary core of staff will be budgeted for in the FY83-84 budget and should therefore be on board by early next year. I would appreciate it if you would let us know of further progress in this regard.

Regarding the question of the ODA funded energy advisor, we understand that the current expectation is that a suitable candidate should be identified shortly and would arrive in Mauritius early next year. Assuming that there are no further delays in the recruitment of the resident advisor, this schedule should enable you to benefit from his presence during the period when the monitoring and evaluation effort, referred to above, is underway. The proposed schedule also provides an additional reason for expediting the recruitment of counterpart local staff for the EPPD so that they can benefit from the advisor's presence in the Ministry from the very beginning.

Finally, let me turn to the Energy Assessment Status Report which was prepared by Mr. Ahmed and discussed with your staff during his visit. Following internal review, this report has now been finalized and I am pleased to enclose a copy for your information. We have also sent fifty additional copies for the Government through the Office of the UNDP Resident Representative in Port Louis. We believe that the report provides a useful and comprehensive picture of recent developments in the sector and of the priorities for future technical and financial assistance by interested donor agencies. We trust that you will find it helpful in your discussions regarding future assistance with the donor community.

I look forward to hearing from you on the points raised above and thank you for your efforts in this matter.

In view of their interest in these matters I am copying this letter to M. Baguant, Financial Secretary; Mr. R. Bheenick, Director, Ministry of Economic Planning and Development, and Mr. H. Danisman, Resident Representative, UNDP.

Sincerely yours,

Stephen Schott  
Division Chief  
East Africa County Programs II.

cc: M. Baguant  
R. Bheenick  
H. Danisman

MA/cc1



## OFFICE MEMORANDUM

Mr. Bhavir

S. B. Bhavir  
10/18/83  
9.

DATE : October 17, 1983

TO : Mr. Masood Ahmed, EGYEA

FROM : G. Schramm, EAPEG

SUBJECT : Mauritius Energy Assessment Status Report

1. We feel this is an excellent report which provides useful follow-up information on the original assessment. It would be helpful however, to obtain some further clarification on a few points.

2. In para. 1.07 reference is made to the need for an energy planning unit which, according to para. 1.05, has actually been established as the Energy Policy and Projects Division in the Ministry of Energy. However, from the text as written it appears as if the whole unit consists of a single economist. By contrast, in section XV of the "Action Taken" section it is stated that the "staff" of the former Energy Planning Unit in the Ministry of Economic Planning had been transferred to EPPD. How much staff? What is the composition? Apparently there are no (permanent?) economist given the further recommendation to provide funds for at least one economist, an engineer and a statistician.

3. It is also not clear how many foreign advisors have already been hired, for what and for how long.

4. In addressing to overall petroleum import issues, the main emphasis of the report is placed on the utilization and conversion of existing sugar mill power plants to either pelletized bagasse or coal. In paragraph 1.02 it is stated that the sugar industry could supply a theoretical surplus of some 250-300 GWH/annum to the network. However, according to table 2.12 of the Dec. 1981 Assessment Report, the total effective capacity of all existing 16 sugar mills is 12.8 MW. At a 50% load factor, not counting any in-house electricity requirements, these plants could produce no more than 50 GWH per year. Does that mean that completely new sugar mill-based generating steamplants are to be added, with an overall capacity 6-7 times larger than the existing plants? Would there be enough bagasse available for supplying them at a sustained basis? Also, it is not clear why such rather small thermal plants designed to use bulky, low-btu feedstock (i.e bagasse) should be so much less costly than larger coal-fired plants (Assessment Report, pp 37-39) i.e \$1400/KW complete for new bagasse-based plants with 10 MW units versus \$1.700-\$1.950/KW for a 29 MW coal-fired plant. Also, if the small-scale bagasse-based plants were to be converted to part-time coal use, coal transport and handling costs are likely to be high. The original information provided in the Assessment Report appears contradictory, and it appears doubtful that the use of new, bagasse-based plants is as favorable as indicated.

5. According to the table on page 4, fuel oil, the fuel to be saved by the power development program, accounts for less than 1/3 of the total petroleum import bill. Little is said about any other potential savings by other sectors, apart from the public bus program. Can anything further be done?

Cleared with and cc: Mr. J. Shaukat

Distribution: Messrs. Gulhati, Sandberg (EANUP), Gue, Payson, Schott, Chadwick (EA2), Wyss, Bronfman, Bharier, Nekby (EAP), Kohli, Gamba (IND), Rovani, Sadove, Sheehan, Rao, Bourcier, Fish, Dosik, Heron, Saunders, Iskander, Kalim, Wackman (EGY)  
Ms. Vaughn (EANVP), Ms. Uluatam (WA2)

:aba

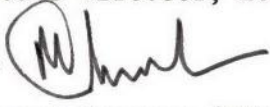


## OFFICE MEMORANDUM

*my change file*

TO: MR. D.C. Rao, Assistant Director, EGYEC

October 13, 1983

FROM: Masood Ahmed, EGYEA SUBJECT: Energy Sector Management Program (ESMP) -  
Central African Power Corporation (CAPCO):  
Review of Future Role and Functions

1. The scope of work outlined in the Activity Initiation Report of July 20 (see Annex I) has been substantially completed. During the reconnaissance mission financed under the ESMP, Mr. Damry chaired the preliminary round of meetings of the Review Committee held in August 1983. During these meetings, the Committee defined its future scope of work, broadly identified areas for TA support, developed an output-oriented plan of action over the proposed six-month period of the review, and allocated precise responsibilities to each of its members for dealing with technical, financial, administrative and legal issues. Instead of the three technical experts initially anticipated, TA consultancy support is required in two areas: (i) a Load Dispatch Study for the CAPCO power system; and (ii) cost of financing the Chairman's participation in subsequent round of meetings of the Committee over the next six months.

2. As far as the cost of the Chairman's participation is concerned, it was envisaged that the Region would raise the necessary finances from either the Regional projects allocation or from external sources. It seems that there is a taxation issue affecting Mr. Damry if his consultancy is paid from sources other than the Bank. In spite of concerted efforts and considerable pressure from us to utilize project funds, the Region was unable to identify funds from within the Bank, and they have now asked us to finance the Chairman's costs under the ESMP. The amount involved is US\$45,000. Details are given in the attached memo (Annex II).

3. Given the relatively small amount involved and the significance of the exercise, we propose that the necessary funds be made available through ESMP rather than risk the possibility of terminating the Chairman's participation in the Committee. In view of the urgency (the Chairman expects to depart on the next round of meetings on October 13), we have agreed to finance the next visit in any event. However, we would like your views before we convey to the Region our readiness to finance Mr. Damry's subsequent visits.

4. As far as the Load Dispatch Study is concerned (cost US\$150,000-US\$200,000), we are in the process of seeking finances from a number of bilateral agencies in Scandinavian countries who have indicated preliminary interest.

Can we discuss at your convenience?

Attachments

cc: Messrs. Bharier (o/r), Wackman (EGYEA)

ZAlahdad:jl

## OFFICE MEMORANDUM

TO: Distribution

DATE: July 20, 1983

FROM: Masood Ahmed, EGYEA

SUBJECT: Energy Sector Management Program - Activity Initiation Report:  
Central African Power Corporation (CAPCO): Review of Future  
Role and Functions

1. The Governments of Zambia and Zimbabwe have requested the Bank to assist in a proposed review of the future role and functions of CAPCO, in which both countries have an interest. The review will be carried out by a nine member bilateral commission comprising four representatives from each country and an outside Chairman. The commission will also need to draw upon the services of specialized technical consultants for its work. Preliminary indications are that three technical experts will be required for 4 - 6 months each to assist in the engineering, economics and legal/institutional aspects of the proposed review. This is an important institutional issue in the energy sectors of both countries and was discussed in the respective energy assessment reports. 1/

2. The Bank has responded to this request by identifying and nominating the Chairman (Mr. P. Damry) for the joint commission and by agreeing to finance through the ESMP, a reconnaissance mission by Mr. Damry to Zambia and Zimbabwe. The estimated cost of the reconnaissance phase is \$15,000.

3. The objective of this reconnaissance phase is to define more clearly the scope of work for the proposed commission and to determine the specific technical assistance that will be required. Some of this assistance may be provided by other donor agencies, once the reconnaissance mission has developed a more detailed justification of the work and a better estimate of the required inputs.

4. The attached documents provide further information on this exercise. The reconnaissance phase will be jointly supervised by ESMP and Programs staff. Please direct any questions or comments on this matter to Mr. G. Gebhart (x72579) or to myself.

Distribution: Messrs. Wapenhans (o/r), Kraske, Wyss, Bronfman, Rigo, Ofosu-Amaah, Erkmen, Nkojo (o/r), Rovani, Rao, Sheehan, Bharier, Sadove, Bourcier, Fish, Iskander, Sanders, Heron, Wackman and Ms. Bracher

1/ Zambia - Issues and Options in the Energy Sector, January 1983  
Zimbabwe - Issues and Options in the Energy Sector, June 1982





# Record Removal Notice

<b>File Title</b> Masood Ahmed - Chronological File - July to December 1983		<b>Barcode No.</b>  1540558		
<b>Document Date</b> 10/6/1983	<b>Document Type</b> Memorandum			
<b>Correspondents / Participants</b> To: Masood Ahmed From: George R. Gebhart				
<b>Subject / Title</b> Financial Arrangements for Mr. Damry's Consultancy to CAPCO (Annex II)				
<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
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# Record Removal Notice

<b>File Title</b> Masood Ahmed - Chronological File - July to December 1983		<b>Barcode No.</b>  1540558		
<b>Document Date</b> 9/30/1983	<b>Document Type</b> Memorandum			
<b>Correspondents / Participants</b> To: Masood Ahmed From: George R. Gebhart				
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<b>Withdrawn by</b> Bertha F. Wilson	<b>Date</b> November 2022			



Mr. David Hopper

David -

Re: Nepal: Renewable Energy Project.

*Mr. Akhaid*

~~① Job - info~~  
~~② [unclear]~~  
③ Review - info

*file in my  
chron.*

1. We talked about the need to improve the Bank's image in the renewables energy area by embarking on a few viable and worthwhile free standing projects of this sort.

2. The Nepal project, identified through the Energy Assessment mission, is ideal to start off this process: It makes technical and economic sense, has a priority in the Nepalese context, and we should be able to attract substantial cofinancing for it from bilaterals or ADB.

3. My staff have discussed the possibility of including it in the lending program with the programs division and been told that while the project itself is sound and worthwhile it cannot be included because of (what I find to be quite extraneous) country reasons (See attached note). I think it would be a shame to miss this opportunity.

4. Can you help?

Yves

October 13, 1983

Mr. Rovani:

Nepal: Renewable Energy Project

Messrs. Terrado, Zinman and I met yesterday with Mr. Tsantis, the Programs Division Chief, and members of his staff, to discuss the initial project brief we prepared for the proposed free-standing project. No questions were raised about the project itself; it seemed to be accepted as a worthy follow-up to the Assessment in a critical area. Rather, Programs took the position that the project could not be considered for inclusion in the lending program at the present time for a number of reasons related to broad country and sector policy. The reasons cited included:

- (1) Country strategy is presently under review--a seminar, to which EGY is invited, is to be held next week.
- (2) There are serious unresolved financing problems with the hydro project Bank is presently considering--a co-financiers' meeting is to be held shortly.
- (3) There must be prior agreement with the Government on broad energy strategy and policy issues, including power tariffs--Messrs. Wiehen and Tsantis are to visit Nepal shortly.
- (4) Agreement on energy sector activities must also be reached with the Asian Development Bank and other donors---a consultative group meeting is to be held in December.

I suspect Programs' attitude was also colored by the fact, just mentioned at the meeting, that they are not in need of additional projects since the FY85 and FY86 lending programs are already over-committed.

I could do little more than express my disappointment at learning that Programs is unwilling to proceed with the project we have proposed until everything else in the sector falls into place. I did, however, urge Mr. Tsantis to at least use the upcoming opportunities to informally sound out to both the Government and other donors concerning their possible interest in the project. He indicated that he will try to do so and that we could take up the matter again at the end of the year when the situation should be more clear following the above-mentioned meetings.

I am bringing this to your attention in view of your interest in free-standing renewables projects and in this one in particular.

R.S. Josik

cc: Messrs. Sheehan, Sadove, Ahmed, Terrado, Zinman (EGY)  
Ms. Kraske (EGY)



Chon file  
10/13/83

IDENTIFICATION, PACKAGING AND PROMOTION OF INVESTMENT  
AND TECHNICAL ASSISTANCE ACTIVITIES RESULTING FROM ENERGY  
ASSESSMENTS AND SECTOR MANAGEMENT PROGRAMS.

This note summarizes the discussion of the above issue at a meeting held on October 6 at which Assessments, Sector Management and Economic Advisory staff of the Department outlined their activities for Mr. Dherse.<sup>1/</sup> The note also sets out a preliminary proposal by the Energy Assessments Division on the steps that could be taken to develop an effective capability to carry out the above task.

The Problem.

The Energy Assessment Reports have confirmed that higher imported energy costs have vastly increased the range of profitable investment opportunities in the energy sector in developing countries. However, the assessment work has also shown that the realization of these opportunities is being hampered by the inadequacy of preinvestment work to identify and prepare priority projects and to bring them to the notice of potential investors and funding agencies. This problem applies particularly to:

- projects in new and relatively unfamiliar technologies: renewables, conservation but also for many countries coal and gas;
- projects in familiar areas but focusing on traditionally neglected aspects; e.g. rehabilitation and upgrading of existing power systems vs. capacity additions;
- smaller projects which have traditionally been of less interest to those financing agencies (such as the Bank) which have the strongest in house capacity for organizing and supervising preinvestment work
- projects suitable for private sector financing, where poor access to information on investment opportunities and the concern that "free" preinvestment work may not necessarily guarantee the right to follow up, has resulted in delays and missed opportunities.

The problem is exacerbated by the inadequate capacity in most Governments for energy strategy formulation and investment programming. This not only affects their ability to "push" priority projects to potential investors but also results frequently in slow and erratic response to project proposals made by potential investors because Government's are uncertain as to whether this is a priority project and has sound technical/economic/financial aspects.

<sup>1/</sup> Other staff at the Meeting were Messrs. Rovani, Rao, Sadove, Saunders, Kalim, Bharier, Wackman and Ahmed.

### A Proposal for Tackling the Problem.

The development of an indigenous capability in the LDC's for energy sector management will take time and technical and financial support. In the interim, a concerted and systematic effort is required to develop project ideas to the stage where they can be picked up by potential investors and financiers. Through the Energy Sector Management Program the Bank has now begun to provide assistance in this area but the Program is small and currently picks up only a fraction of the potential follow-up. Its coverage needs to be expanded to include the following:

- (i) systematically assist Governments who have had energy assessments in preparing a country energy policy and investment strategy paper for public and private investors and donors; including the preparation of a portfolio of ranked investment opportunities. This entails
  - carrying out project definition and preliminary preparation work on all investment options identified in the assessments; and
  - assistance in organizing and supporting country level investment promotion meetings or other vehicles for disseminating investment options (UNDP round-tables, aid-consortia groups).
- (ii) assist Governments in analyzing energy investment proposals made by private sector in response to announced Government strategy; over time Governments will develop this capability through parallel efforts to strengthen their institutional framework, including those supported by bilaterals and other assistance agencies.
- (iii) establish systematic links with trade, investment and export promotion agencies in the investor/donor countries to bring potential investment opportunities to their notice, and through them to the notice of the private sector. (Note: our existing links are with aid agencies who have limited budgets and negligible private sector links). This effort would have obvious spinoffs in terms of promoting cofinancing possibilities; it would also require close collaboration with IFC.

### Next Steps and Resource Requirements.

Should management approve the concept of providing this assistance to member countries through a broadening of the focus of the ESMP, the nucleus of staff that is already working on the Program will need to be strengthened. This will entail supplementing the essentially technical and economic expertise of current staff with financial analysts and with staff who have experience of project packaging and promotion in the private sector. The former could be recruited internally, the latter from IFC or directly from the private sector.



The precise additional staff requirements will depend on a number of factors, but we believe that a minimum critical mass to undertake this type of work would require the following additional fixed-term staff to supplement existing assessment division staff:

- 1 Financial Analyst
- 2 Project Marketing and Packaging Staff (could have finance, economics or technical background but experience of this type of work in the private sector would be essential).
- 1 Renewables Project Engineer (background in commercial renewable energy project design and implementation useful).
- 1 Conservation Engineer (background in transport sector useful)
- 5 Total

In dollar terms, including consultant travel and support staff costs, this would amount to an annual allocation of \$1.0 million and could very well represent the Bank's contribution to this joint Program.

This level of staff resources would enable us to begin a modest program of investment promotion activities and to supervise consultants providing direct support to a few Governments in project preparation and review. Clearly, this would be a long way from a full scale program for all countries but a trial operation period at this low level would test the feasibility of the approach before embarking on a larger program.

EGYEA

J.Bharier/M.Ahmed/dw

*Choufi*

## OFFICE MEMORANDUM

October 13, 1983

TO: Mr. Jean-Loup Dherse, V.P., EIS

FROM: Yves Rovani, Director, EGY

SUBJECT: Resource Issues in Energy

1. As I mentioned earlier, and will come out of the series of meetings with EGY Managers, the Bank is facing very serious staff resource gaps in several key areas of our work. It is also clear that not all of these gaps can be filled at once and we must therefore make some difficult choices in determining resource allocation priorities for FY 84 and 85. We are in the process of examining those alternatives in the Department, but I thought that it would be useful to highlight six key areas for your review and subsequent discussion.

(1) Country Energy Strategy

The energy assessment program has provided us with a basic diagnosis of energy problems in 45 countries and should cover another 25 in the next 2 years. However, this diagnosis needs follow up both at the country level and in the Bank. The ESMP is a beginning for the former but it is new and operating well below the levels initially envisaged because of the pace of the contributions received from donor countries. The Bank has not contributed anything yet to the ESMP. It should, in order to ensure the credibility of the program (donor countries are beginning to question the Bank's commitment to it) and its viability (we cannot hire staff for more than one year at a time though we need a small nucleus of permanent staff to supervise consultants), as well as to preserve the multilateral character of the programs in the face of bilateral pressures. A Bank contribution could come either from the FY85 administrative budget, or from an appropriation from profits, or from the current (FY84) budget contingency.

Even more serious is the Bank's need for formulating its own country energy strategy. Two aspects are involved. One is the case of countries not covered by assessments, including such large countries as China, India and Brazil. The Regions (Programs) ask us to help because we have the staff expertise. However, we are not budgeted for this work and neither do they have resources they could transfer to us, so far we have coped by diverting resources from other work (as for India) or by negotiating the terms of reference down to the level of input that we could afford (as for China). This is neither sustainable nor satisfactory.

The other aspect of the problem is the preparation of Energy Program Papers, based upon completed Energy Assessments. The EPP's would serve as a building block for a better and longer range Bank energy strategy in each country. In sending you the minutes of the OVP meeting of last December, which approved the EPP and the Region's responsibility for doing them, I stressed the fact that zero resources had been appropriated for this work in FY84 despite Mr. Stern's directive recorded



in the minutes. Part of the problem has been the lack of staff in the region who could carry out such work. I feel increasingly that the only way to get this effort started is for us to offer to do say 12 EPP's in FY85 using the assessment division staff who are best qualified for this work. However, we will need the resources and even more important the commitment of regional management to provide specialist support (power, programs staff) and to make use of the results in programming subsequent Bank operations. The planned EPP's for Turkey and Nigeria will help to provide a model and a better costing.

## 2. Country Power Strategy

Two areas where we need a special effort to improve our understanding of problems and solutions are electric power and natural gas. Power is familiar territory but as was obvious from the discussion on Tuesday, a lot of new things have happened which we need to catch up with. My suggestion was that we encourage the regions to program for relevant and well focussed power sector work in a number of priority countries as part of the CESW programming next November. We could provide guidance/help as required but only if they are willing to reimburse us.

## 3. Country Gas Strategy

We have gas utilization pricing and other studies ongoing in about 29 countries. China badly needs help in the formulation of a gas strategy. The first step planned is a gas seminar in China to impress on them that they have a problem. If they bite, we will have to deliver a strategy. The seminar and the strategy will both be very costly relative to our budget. More generally, gas is likely to account for an ever increasing proportion of our lending. To face up to all that we have our petroleum operational staff who have little gas expertise and are in any case committed to lending, and a gas engineer, a gas economist and a gas generalist as Front Office support staff. This is thoroughly inadequate; particularly since the gas consulting profession is short on economics and needs extra guidance. Philippe has been exploring with the International Gas Union the prospect for free secondments from gas utilities. On the Bank side CESW will also be attempted next November.

## (4) Private Sector

Opening the door to the private sector to participate in our thinking, supply staff inputs where no conflicts of interest are involved, or to join in operations is not enough. We will have to drag them in, kicking and screaming. We discussed the case of Bauer in petroleum (which leaves me the problem of generating a staff year to reimburse Iskander's divisions). There is also the wider question of promoting the investment opportunities identified through the Assessments/ESMP; on this you will have today further recommendations arising from our meeting with assessments/policy managers. The staff resources involved may not be very large, and returns from private sector involvement should far outweigh them. But they have to be found.

## 5. New and Renewables

We should do more in this area also. Operationally, we will try to get a few free standing operations in the program. In regard to fuelwood, I will continue to campaign with the Regions to encourage them to allocate responsibility and resources more clearly, at the divisional level to rural energy and fuelwood, using the output of assessments as a primer.

## 6. Quality Control

All country strategy efforts, in energy, power and gas, will require a strengthening of our capacity for review and quality control which is already overtaxed.

## Conclusions

Summing it up, it all amounts to a pretty tall order. In FY 84, major surgery may be required in longer term research, methodology, external relations to demonstrate what should and can be done on the country strategy front. I intend to go over the work programs of the various units in November before finalizing the budget priorities for the balance of FY 84.

Regarding FY 85, I have serious doubts that the sort of effort which we think is needed will be supported with commensurate resources.

Sector work has always been budgeted last and least on two grounds: the Bank is a lending and therefore projects institution; McNamara's efficiency approach "7" give you resources for sector work when you know how to use them. Though Management is fully conscious of the need for improved country strategy and actually strongly advocates more effort in policy and institutional reform, I am not sure that they are aware of the cost and I am sure they will run into difficulties with the Board for any increase in real terms in the FY 85 budget. The risk is substantial that we fail to back up our country strategies with the necessary professional analysis and end up with glib country strategy statements.

The final point is who should get the resources to do the work. Programs have the responsibility to put together country strategies but no staff capacity of their own to develop the sector inputs. This is contributed by Projects. As regards industrial sector work, the Regions have their own IDF capacity. But in energy the only regional capacity is in power and you know how weak power sector strategy is except for EMENA's recent efforts. Clearly EGY has a major input to make. The issue is getting the resources to do the work without treading on Regional sensitivities. One way would be for Programs to ask for the resources and subcontract work from us but this would require prior commitments to enable us to staff up accordingly.



Choufien

## OFFICE MEMORANDUM

October 12, 1983

TO: Messrs. Y. Rovani, Director, EGY and  
D.C. Rao, Assistant Director, EGY

FROM: Julian Bharier, Harold Wackman and Masood Ahmed (EGYEA)

SUBJECT: Discussions with UNDP in New York - Back to Office Report

1. We visited UNDP in New York on October 7 to discuss a number of programming and budgetary questions relating to the Assessments and Management Programs with Mr. Harland and other UNDP staff. We also met with Mr. Luis Gomez, the new head of the Natural Resources Division in DTCD, to discuss ways to improve the coordination between our respective programs.
2. The main points discussed at our meeting are summarized in the attached letter being sent to Mr. Mashler. However, we would like to bring three points to your attention in particular:
  - (i) The possibility of obtaining upto \$600,000 of untied Japanese funds entrusted to UNDP for renewable projects; we have agreed to submit three project proposals of about \$200,000 each to Bruce Harland who will explore this further; Dick Dosik has been alerted.
  - (ii) The possibility of obtaining \$150-200,000 from a special UNDP fund to promote the investment/technical assistance opportunities identified by the Assessment/Management Program; we have agreed to submit a proposal outlining a program of such activities.
  - (iii) Discussions with DTCD. While we were unable to see Ms. Anstee (who was too busy) we did meet with Mr. Gomez who is Vladimir Baum's replacement. We gave him a list of our staff and of the ongoing and planned activities under both Assessments and ESMP. He promised to reciprocate on the staff list but said he would have to check with others in DTCD before he could let us have a list of their planned activities. This meeting was useful in establishing contact with Mr. Gomez but we clearly have some way to go before effective coordination with DTCD becomes the norm. We agreed to stay in touch and to meet periodically to exchange general program information as well as to resolve specific operational issues on overlap/duplication etc.

M.Ahmed/dw

October 13, 1983

Mr. William Mashler  
Senior Director  
Division for Global and Interregional Projects  
UNDP  
New York

Dear Bill:

1. Further to our extremely productive discussions with Mr. Harland and your staff in New York last Friday, I thought it would be useful to summarize our understanding of the points discussed and of the follow-up required. These points are listed below.

Budget Document Revisions.

2. We agreed to revise the budgets for both the Assessment and Management Project Documents to reflect the additional contributions that have been received to date. Based on the figures we received, the budgets will be revised as follows. For the Assessment Project (INT/80/009), we will add the contributions from Sweden (\$493,151), half of the contribution from Norway (\$102,000) and the \$120,000 allocated from the Energy Account for the work in the South Pacific countries. This total additional amount (\$715,151) will be allocated first to meet the projected disbursements in calendar 1983 and the balance will then be allocated to calendar 1984.

3. For the Management Program (INT/83/005), we will add in the contributions from Denmark (\$114,942), the Netherlands (\$2.0 million) and the other half of the Norwegian contribution (\$102,000). The total increase (\$2,216,942) will be allocated across CY83-85, in line with the projected disbursements for these years.

4. We expect to send you the new budgets, incorporating the above revisions, for both the Assessments and Management Programs before the end of next week for UNDP's approval and signature.

5. We also discussed three other points related to budgeting aspects. First, we agreed to prepare an estimate of the resources required in calendar 1984-85 to complete the obligations under the existing Assessment Project Document, i.e., completion of the 60 countries initially envisaged plus the seven small countries under the Swedish contribution plus the two South Pacific Islands (Vanuatu and Western Samoa). This costing, which we hope to have for you by the end of October, will then be used to work out how any additional contributions made for the Assessment Program could be shared between completing the existing output obligations on the one hand and embarking



on either additional countries or second round assessments on the other. In this context, we appreciate your desire to substitute some of these additional contributions for the money originally pledged to the Program for CY 84-85 from the UNDP's own IPF resources. As we agreed, the feasibility of making this substitution can best be determined once the estimated resource requirements have been clearly defined and the situation on potential additional contributions (particularly from CIDA) is also clearer.

6. Secondly we agreed that a transfer of \$17,500 would be made from the UNDP country IPF for Nigeria to the ESMP to cover the cost of the computer acquired for NEPA. This allocation and the subsequent ESMP budget revision will be made at a later time when the internal budgetary transfer has been processed.

7. Finally on budgets, we agreed that we would follow up directly with the UNDP Resident Representative's office in Paraguay regarding the contribution from that country's IPF funds towards the costs of the energy assessment mission planned for Paraguay. We are prepared to draft an appropriate project document, which we understand can be authorized by the Resident Representative. We will keep you informed of any further developments in this regard.

#### Renewable Project Proposals.

8. We discussed the possibility of utilizing some of the funds made available to the UNDP by the Japanese Government to carry out work in the renewables area. As a next step in exploring this possibility, we agreed to submit to Mr. Harland three proposals for renewable energy projects at an average cost of about \$200,000 each. He would then follow up with the UNDP staff responsible for administering these funds. If and when these funds are allocated for these projects, we would take responsibility for supervising their execution as part of the ESMP and for ensuring their quality and timely implementation. We are coordinating with Mr. Dosik on this matter and expect to send the initial project proposals by the end of next week.

#### Promotion of Investment Opportunities.

9. We fully share UNDP's concern that the investment and technical assistance opportunities identified under both the assessment program and through the subsequent activities funded by the ESMP, should receive widespread and timely exposure to potential investors and donors. We also recognize that the efforts made to date in this area need to be strengthened and intensified. During our meeting we discussed various mechanisms that could be utilized for this purpose. We agreed that, as an initial effort, we should plan to assist two countries (tentatively identified as Niger and Burundi) in preparing a portfolio of energy investment and technical assistance opportunities based on the assessments. These would be presented at forthcoming Round-Table Donor's



meetings as well as to potential private investors. We also agreed that in parallel we would embark upon a small "pilot" effort to promote a few of the investment opportunities resulting from specific activities undertaken through the ESMP.

10. However, to carry out the above work, which has not been budgeted for in our current programming, will require additional resources. We agreed, therefore, that Mr. Harland with the help of your staff, would explore the possibility of obtaining some additional funds available in the UN to finance work of this nature. To assist in these efforts, we agreed to prepare a project proposal covering the assistance for the two country round tables and for a small amount of promotional/marketing activity for selected ESMP products. This proposal which would amount to about \$100-150,000, should be transmitted to you for your comments next week.

#### Updated Progress Report.

11. We share the view that it would be useful to prepare an updated version of the November 1982 Progress Report on the two programs. This updated version would record the progress made in both the funding and the implementation of the two programs during calendar 1983. The report would be used as a reporting mechanism for our existing donors and as an aid in our joint fund-raising efforts for the continuation of the programs in the coming years. We agreed that our staff would take responsibility for preparing a first draft of the report with the target of having the final version ready for distribution in February, 1984. We discussed some ideas on the content and structure of the report and will now prepare a draft outline by the end of next month. Once you and your colleagues have had a chance to look at this, we should plan to meet in early December to discuss any further thoughts on this matter.

#### Cooperation with DTCD.

12. Finally, I would like to thank Mr. Harland for arranging the meeting with Messrs. Gomez and Scheiber to discuss how we can coordinate our activities with the energy related programs of DTCD. We found it to be a useful exchange of views and we hope that this will lead to better cooperation and coordination in programming and implementing our respective operations. During the meeting Mr. Gomez agreed to provide us with a list of his staff and their specialties, as well as a list of their completed reports and planned activities. We would appreciate it if your staff could follow up on this matter. A specific related issue is the planned fielding of a DTCD institutional review mission to Zambia, which we also discussed. Again, it would be useful if we could obtain some details on this proposal so that we can coordinate our own assistance planned for Zambia under the ESMP accordingly. Finally, we agreed that UNDP would write to the Norwegian Government informing them of the steps being taken to coordinate DTCD and Assessment/ESMP activities; a point they had raised in their recent letter to UNDP.



13. I think that covers the main points we discussed on Friday, but please let us know if something has been missed out. I am also copying this letter to Bruce Harland for his information.

Best Regards,



Hal Wackman  
Acting Chief  
Energy Assessments Division  
Energy Department

cc: Mr. A.B. Harland  
Deputy Assistant Administrator  
and Director, Energy Office  
UNDP  
New York

bcc. Mr. Rovani, Mr. Rao, Mr. Bharier o/r, Ms. Owen

M.Ahmed/dw

Energy Sector Management Program

Activity Status as of 10/10/83

<u>Country</u>	<u>Project</u>	<u>Report<sup>1/</sup> Completed</u>	<u>Work in Progress</u>	<u>Work to start in next 3 Months</u>	<u>Technical Assistance or Investment Follow-up Identified</u>
Bangladesh	Priority Investment Program for Energy Energy Assessment Status Report		X	X	X
Burundi	Assistance for Petroleum Supply Management Assistance for Developing Petroleum Exploration Strategy Energy Assessment Status Report		X X X		X
Haiti	Energy Assessment Status Report			X	
Indonesia	Energy Assessment Status Report			X	
Kenya	Advice and Support for Implementation of Solar Water Heating Project Preparation of Coal Import Action Plan Power Sector Efficiency Audit Energy Assessment Status Report		X X	X X	X X
Malawi	Tobacco Industrial Efficiency Program Preparation Institutional Review and Identifi- cation of Technical Assistance Requirements for Energy Planning Energy Assessment Status Report	X	X X		X X X
Mauritius	Energy Assessment Status Report	X			X
Panama	Power Sector Efficiency Audit	X			X

<sup>1/</sup> Report and follow-up agreed with Government.



<u>Country</u>	<u>Project</u>	<u>Report<sup>1</sup>/ Completed</u>	<u>Work in Progress</u>	<u>Work to start in next 3 Months</u>	<u>Technical Assistance or Investment Follow-up Identified</u>
Papua New Guinea	Institutional Review and Identifi- fication of Technical Assistance Requirements			X	
	Advice on Electricity Tariffs and Regulations for Auto-Generation Energy Assessment Status Report	X		X	X
Rwanda	Energy Assessment Status Report		X		X
Sri Lanka	Power Sector Efficiency Audit Energy Assessment Status Report	X		X	X
Sudan	Power Sector Efficiency Audit		X		X
	Management Assistance to the Ministry of Energy and Mining	X			X
Uganda	Advice on Petroleum Import Arrangements		X		
Zambia	Energy Assessment Status Report			X	
Zimbabwe	Power Sector Efficiency Audit Energy Assessment Status Report	X	X		X X
	Capco: Support to bilateral commission reviewing future role and functions		X		X

EGYEA  
Oct., 1983

PAGE 1 2 OFFICIAL DEPT DIV EGY/EGYEA

MR. W.J. MCCANN, DEPARTMENT OF MINERALS AND ENERGY, PORT MORESBY, PAPUA NEW GUINEA. RE INSTITUTIONAL REVIEW MISSION. GRATEFUL IF YOU ARRANGE TO HAVE AS MUCH AS POSSIBLE OF THE FOLLOWING BACKGROUND INFORMATION PREPARED PRIOR TO ARRIVAL OF REVIEW MISSION ON OR ABOUT OCTOBER 23. (I) CHARTS DEMONSTRATING OVERALL AND ENERGY RELATED PLANNING AND POLICY FORMULATION PROCESS IN PNG SHOWING AGENCIES INVOLVED, (II) ORGANIZATIONAL CHARTS SHOWING INTER-RELATIONSHIPS OF INSTITUTIONS, COMMITTEES, WORKING GROUPS INVOLVED IN NATIONAL ENERGY PLANNING AND POLICY FORMULATION, (III) PRESENT ORGANIZATION STRUCTURE OF DME AND ITS DIVISIONS, (IV) OBJECTIVES AND TERMS OF REFERENCE FOR DME AND ITS DIVISIONS AS WELL AS OTHER ENERGY POLICY INSTITUTIONS, COMMITTEES AND WORKING GROUPS, (V) PRESENT ENERGY INFORMATION FLOW SYSTEM WITHIN DME GIVING DATA SOURCES AND OUTPUTS (PUBLICATIONS, REPORTS, ENERGY BRIEFS, ETC.) AND THEIR APPLICATIONS, (VI) JOB DESCRIPTIONS OF ENERGY RELATED STAFF WITHIN DIVISIONS OF DME, (VII) EXISTING ENERGY RELATED TRAINING ARRANGEMENTS IN PNG, (VIII) LIST OF CURRENT AND PLANNED TECHNICAL ASSISTANCE AND TRAINING PROGRAMS RELATED TO ENERGY SECTOR INSTITUTIONAL STRENGTHENING, (IX) ANY OTHER INFORMATION YOU FEEL MAY BE USEFUL. WE REALIZE THAT MUCH OF THE ABOVE MAY NOT BE AVAILABLE WITH YOU IN FINALIZED FORM. DATA IN

TELEX 22211 10.5.83

PNG: ESMP

ZALahdad: 75272

CL w & cc: Mr. Ahmed (EGYEA)

Julian Bha... EGVEA

Energy



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PAGE 2 OF 2 EGY/EGYEA

DRAFT OR NOTE FORM WOULD SUFFICE. OBJECT IS TO SPEED UP INITIAL ORIENTATION PROCESS FOR THE REVIEW MISSION. THANKS AND REGARDS, MASOOD AHMED, ENERGY ASSESSMENTS DIVISION, ENERGY DEPARTMENT, WORLD BANK.

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in JB's office  
with Conlan

Notes on background to a briefing for the Director of  
the Australian Development Assistance Bureau (ADAB)  
on Funding the Energy Sector Management Program

1. The Energy Assessments Division of the Energy Department of the World Bank began a series of energy sector assessments in developing countries in November of 1980 as part of a Joint UNDP/World Bank programme. It is envisaged that energy sector assessments will be completed for 67 countries during a five year period, with a number of additional smaller countries being included as resources become available.
  
2. In November of 1982 a complementary programme of energy sector management was launched, again jointly with the UNDP, to facilitate implementation of the policy and investment initiatives agreed with Government in the course of energy sector assessments. One important objective of this programme is to undertake pre-feasibility and pre-investment work designed to confirm investment opportunities and to accelerate the implementation of highly economic energy management and development measures. The budget target for the next four years is US\$35 million. Typical projects for which preliminary design and costing is now planned or under way include:
  - (a) power transmission and distribution loss analysis in Sudan and Kenya, leading to specification of required equipment for system upgrading and new engineering management procedures;
  - (b) detailed pre-feasibility study for coal handling, coal substitution, and industrial energy conservation in Kenya;
  - (c) identification of pilot program to improve the efficiency of wood-fired tobacco curing in Malawi leading to an industry-wide investment programme for tobacco barn modification;
  - (d) engineering design and economic studies of power generation from surplus bagasse in Mauritius.
  
3. The Energy Sector Management Programme also seeks to increase the capability of government to develop and to implement economically efficient plans for energy management and development. For example, a study has begun in Papua New Guinea to identify the most appropriate institutional arrangements for the sector, including the need to evaluate and facilitate private sector investment proposals for oil and gas development.
  
4. A basic philosophy underlying all the work in the ESMP is to prepare a portfolio of priority technical and financial assistance opportunities which can subsequently be financed by multilateral, bilateral and other agencies using their normal financing methods. Thus all reports produced under the Programme are circulated first to the donors to the Programme and then to other financing agencies interested in this area. ESMP staff are also available to brief those agencies on specific projects of interest to them.




5. Given the nature of the work being carried out under the ESMP, it is neither feasible (nor acceptable to the UNDP/Bank) that contributions to the Programme be strictly tied to the procurement of consultant services from the donor country on a specific activity basis. However, the Management of ESMP recognize the donors' concern in this regard and they are willing to provide an assurance that a substantial portion of any contribution will be spent on the procurement of services from the donor country and to provide regular reports on this question. The specific percentage of ~~one~~<sup>the</sup> contribution that would be spent in this way will need to be agreed but a 50-70% tied element should be feasible. Moreover, as indicated above, the Australian Government will be able to participate in all of the follow-up projects identified through the ESMP and to finance these on a regular tied basis.

6. A number of countries have already made untied contributions to the Programme. These include Britain, The Netherlands, Denmark, Norway and Sweden. Contributions are also expected from Finland and Switzerland and are being negotiated with Canada and France. Given these commitments, the first year budget of US\$4 million has already been met and an Australian contribution would be used for the second and subsequent years of the Programme's operations.

## OFFICE MEMORANDUM

October 4, 1983

TO: Mr. Julian Bharier, Chief, EGYEA

FROM: Masood Ahmed, EGYEA 

SUBJECT: Mauritius: Energy Planning and Management TA Project -  
Supervision Mission, Back to Office Report

1. I visited Mauritius from September 11 to 16 to supervise the above project and to prepare an overall status report on sector developments since the finalization of the Energy Assessment Report in December 1981. During my stay I met with the new Minister of Energy, Mr. Mahyendrah Utchanah, and with the various officials involved in the sector (See attached list in Annex I). I also met with the UNDP Res Rep and with the British High Commission's staff who are dealing with the recruitment of a proposed resident energy advisor to the Government.

Principal Findings

2. Both the pace of sector developments and the implementation of the UNDP/Bank Technical Assistance Project have been somewhat delayed because of the uncertainty resulting from the March 1983 Government reshuffle and the preparation for the subsequent elections in August 1983. In particular, the expected increase in electricity tariffs, required to improve CEB's financial situation, was postponed until after the election; however, an interim increase of about 15% was announced during my stay and the Government has also indicated that a further tariff revision will be made in early 1984 once the results of an ongoing marginal cost pricing study, being carried out by EDF, become available.

3. A second issue is the delay in staffing the Energy Planning and Projects Division (EPPD) which was set up in the Ministry of Energy to analyze policy and investment options, coordinate the work of sector agencies and act as a focal point for technical and financial assistance in energy. This delay was caused partly by the delay in the approval of the overall 1983/84 Government budget which makes provision for the required staff. However it also reflects some disagreement between the Ministry of Planning and the Ministry of Energy on their respective roles in energy sector planning and management. The previous allocation, agreed at the time of the creation of EPPD, was that the Ministry of Energy would have line responsibility for the preparation of energy policy and investment programs and for the day to day supervision of the CEB and other sector agencies. The Ministry of Planning was to be responsible for vetting these policy and investment proposals to ensure that they were compatible with the Government's overall economic prospects and policies and with resource availability and for ensuring that the energy implications of projects in other sectors were identified and analyzed. This is a perfectly workable division of responsibilities and remains the Government's official position. However, I was told that



the Ministry of Planning is now not convinced of the need for a separate policy and planning unit in the Ministry of Energy and would like to have the whole question reexamined. Partly as a result of this uncertainty, the one key staff member of the EPPD who has been working on energy issues for about four years, has temporarily transferred to the Central Water Authority, although he still spends roughly three-quarters of his time in the Ministry working on urgent tasks which need to be carried out.

4. During my stay, I discussed this question with the various departments involved. The basic point I emphasized was that regardless of how such a unit was organized, located, or staffed (permanent positions, secondment, etc.), there were clearly a number of priority tasks which needed to be done and for which some sort of coordinating/monitoring unit was essential. The most important of these tasks is the monitoring and evaluation of the proposed bagasse pelletization project and the FUEL coal/bagasse utilization plant. As discussed in the Energy Assessment Status Report (draft being circulated in parallel), the comparative results of these projects will essentially determine the shape of the bulk of the power (and energy) investment program for the next decade. Moreover, the successful monitoring and evaluation of these projects requires a multi-disciplinary team (engineering and economic/financial expertise) which views this as one of its principal functions; an ad-hoc committee without a permanent core group is unlikely to be successful.

5. Following these discussions, the Government has indicated that it will take the steps necessary to bring on board a small core of staff in the EPPD by the end of this year. However, the mission recommends that the Bank reemphasize the importance of this matter in a follow-up letter to the Government which could be sent with the final version of the Energy Assessment Status Report.

#### Project Disbursements.

6. The rate of project disbursements has reflected the delays discussed above. Disbursements for work carried out to date amount to about \$31,000 as opposed to the \$77,000 budgeted under the project for calendar 1983. Even allowing for some additional commitments through December, it is clear that actual disbursements will fall short of anticipated levels and the project budget will need to be re-phased at the end of the year. While it is possible to accelerate disbursements (through the execution of the data processing equipment purchases envisaged for this year), this would not be advisable until the EPPD staffing issue has been satisfactorily resolved.

#### Recruitment of ODA adviser.

7. An ODA financed adviser was supposed to arrive in mid 1983 to help in the establishment of EPPD and to provide on the job training for its staff. Recruitment of a suitable candidate by ODA has, however, proved to be a slow process. I was told by the British High Commission's

staff that the current expectation is that someone will be recruited by the end of 1983 for arrival in Mauritius by spring '84. Given the delay in the local staffing of the EPPD, the current schedule for the arrival of the resident advisor would not cause any significant problems.

Energy Assessment Status Report.

8. A draft of this report was prepared in the field and discussed with the Government. It is now being circulated for internal review and clearance in the Bank. The Government has cleared this draft for distribution in final form. However, we agreed that the draft would be resubmitted to them for clearance if the internal Bank review resulted in substantive changes.

Next Steps.

9. The Energy Assessment Status Report will be sent to the Government following internal review and clearance. I will continue to press ODA to make progress on recruiting an energy adviser.

10. Assuming that the EPPD staffing question is resolved by the end of the year and an adviser is on board by spring 84, the next supervision mission for the project should be scheduled for June/July '84.

M. Ahmed/ccl

cc: Messrs. Gulhati, Sandberg (EANVP) Gue, Payson, Schott, Chadwick (EA2) Wyss, Bronfman, Shaukat, Nekby (EAP) Kohli, Gamba (IND) Rovani, Sadove, Sheehan, Rao, Bourcier, Fish, Dosik, Heron, Saunders, Ms. Vaughn (EANVP), Ms. Uluatam (WA2)

EGYEA Staff



Annex I


List of Persons Met

The Honorable M. Utchanah,	Minister of Energy & Internal Communications
The Honorable A. Gayan,	Minister of External Affairs
The Honorable C. Pillay,	Minister of Industry
Mr. M. Baguant,	Financial Secretary
Mr. D. Manna,	Ministry of Finance
Mr. K. Sumodhee,	PS, Ministry of Energy
Mr. R. Kisnah,	Ministry of Energy
Mr. J. Labat,	General Manager, CEB
Mr. R. Closel,	Chief Engineer, CED
Mr. F. Piat,	General Manager, Shell
Mr. Leclezio,	Doger de Speville Co.
Mr. A. Ahmad,	President, Chamber of Commerce
Mr. S. Marie-Jean,	Mauritius Sugar Industry Research Institute
Mr. H. Danisman,	UNDP Resident Representative
Mrs. Yang,	UNDP Program Officer
Mr. C. Thompson,	British High Commission
Mr. Rajagopalan,	Indian High Commission

## OFFICE MEMORANDUM

October 4, 1983

TO: Distribution

FROM: Masood Ahmed, EGYEA 

SUBJECT: Mauritius Energy Assessment Status Report

1. Attached please find a draft of the above report which was prepared during a mission of September 1983. The report briefly sets out the main developments in the sector since the preparation of the December 1981 Energy Assessment Report, and it outlines the progress made in implementing the various recommendations of the Energy Assessment. The report also identifies the priority areas where future technical assistance to the sector should be focused.

2. I would be grateful for your comments on this draft, by COB October 10 if possible. The Government has already reviewed this draft during the mission and has cleared it for final distribution under the Energy Sector Management Program, unless the internal Bank review results in substantial changes. In that event, the draft should have to be resubmitted to the Government for their clearance.

cc and cleared with Mr. J. Bharier.

Distribution:

Messrs. Gulhati, Sandberg (EANUP) Gue, Payson, Schott, Chadwick (EA2) Wyss, Bronfman, Shaukat, Nekby (EAP) Kohli, Gamba (IND) Rovani, Sadove, Sheehan, Rao, Bourcier, Fish, Dosik, Heron, Saunders, Iskander, Kalim, Wackman (EGY)  
Ms. Vaughn (EANVP), Ms. Uluatam (WA2)

EGYEA Staff



DRAFT

UNDP/WORLD BANK  
ENERGY SECTOR MANAGEMENT PROGRAM

ACTIVITY COMPLETION REPORT NO \_\_\_\_\_

MAURITIUS  
ENERGY ASSESSMENT STATUS REPORT

EGYEA  
October 1983

MAURITIUS  
ENERGY ASSESSMENT STATUS REPORT

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## MAURITIUS

### ENERGY ASSESSMENT STATUS REPORT 1/

#### I. SUMMARY AND INTRODUCTION

- 1.01 Mauritius' primary energy requirements are met in roughly equal parts from indigenous bagasse and imported petroleum products, but these two fuels are used in very different ways. Bagasse, a by-product of the sugar industry, is used almost exclusively to meet the energy needs of that industry and its contribution as a direct energy source to the rest of the economy is very small. The energy requirements of the economy, excluding the sugar sector, are met primarily (about 90 percent) from imported petroleum products supplemented by a small amount of hydro electricity and coal.
- 1.02 The crux of Mauritius' energy problem and, therefore, the principal focus of the Energy Assessment Report prepared in 1981<sup>2/</sup>, was on how to contain the rising bill for oil imports, which had grown from \$10 million in 1973 to nearly \$60 million in 1980. The key to achieving this objective lay in a program to improve the very low efficiency with which the sugar industry utilized bagasse to generate steam and electricity. Through these improvements the sugar industry could become a major net supplier of electricity to the rest of the economy, capable of producing a theoretical maximum surplus of about 250-300 GWh/annum which was roughly equal to the island's 1981 total oil based electricity generation and accounted for a third of the oil import bill in that year.
- 1.03 Based on these improvements in bagasse energy production and allowing for the establishment of a small coal fired power station in the second half of the decade, as well as a modest but sustained effort to improve the efficiency of energy use in all sectors of the economy, the Assessment Report outlined an "Accelerated Energy Program" which would enable the country to reduce its dependence on oil imports from 90% of commercial energy in 1980 to about 60% by 1990. Oil imports would also decline in absolute terms and the energy import bill (including the cost of imported coal) would be substantially lower under this scenario as compared with a "Business as Usual" scenario based on the extrapolation of past trends.
- 1.04 The report also emphasized that a prerequisite for the successful implementation of the "Accelerated Energy Program" was the immediate strengthening of the Government's energy policy and management capability, which had previously been weak and fragmented. In

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<sup>1/</sup> This report was prepared by Masood Ahmed during a mission to Mauritius in September, 1983.

<sup>2/</sup> Mauritius: Issues and Options in the Energy Sector, December 1981. Report of the joint UNDP/World Bank Energy Assessment Program.



particular there was a need to establish a small unit with engineering and economic expertise that would be charged with coordinating energy sector activities and which would analyse and recommend policy and investment options for decision by national policy makers. An outline of the technical assistance required to establish such a unit as well as to carry out other tasks in the sector was included in the report.

- 1.05 The Government agreed with the principal thrust of the analysis in the Energy Assessment Report and has subsequently acted quickly and broadly to implement its major recommendations. As discussed in Section III below, a number of steps have been taken to define more precisely the potential contribution of bagasse. Some projects have been started to expand bagasse electricity production and to test the feasibility of pelletization. In parallel, the institutional framework of the sector has been strengthened by the creation of an Energy Policy and Projects Division (EPPD) in the Ministry of Energy which has begun to play a much more active role in sector policy formulation and investment programming. This division has also helped to coordinate the technical and financial assistance being provided for the sector by various donor agencies. However, because of staffing constraints (there is only one economist, on secondment, in the EPPD) there has only been limited progress on the demand management front and the existing staffing is likely to prove increasingly inadequate even for the management of the energy supply diversification program as this program enters into the next phase of major implementation.
- 1.06 Mauritius is now entering into a critical phase of its energy development program. Much of the preliminary groundwork for bagasse development having been done, the need now is to ensure that the first pilot projects are carefully designed and monitored so that their relative technical and economic merits can be considered in developing the full scale program of bagasse and/or coal based power generation which is likely to ultimately amount to over Rs 1 billion. In parallel, work on improving the efficiency of energy use in the large industrial and commercial users and in the public sector also needs to begin. In short, the momentum that has been generated in the energy sector over the past three years needs to be maintained so that by the end of the decade the country can actually realize the benefits of lower cost energy. To achieve these objectives the immediate requirements are that human and financial resources be focussed on the priority areas in the sector. In particular the small amount of budgetary resources required to establish an effective sector management capability in the Ministry of Energy should be allocated as quickly as possible.



## II. MAIN SECTOR DEVELOPMENT 1981 - 1983

- 2.01 Very slow economic growth and continued high energy costs have been reflected in the stagnant demand for energy during 1981-82. As the following table shows, electricity production and sales remained virtually unchanged since 1980 (itself a year in which there was no growth over the previous year). However, the pattern of electricity generation has altered with production from the sugar factories increasing by over 60% as a result of new plant and efficiency improvements and the signing of new contracts by the CEB for higher purchase volumes. At the same time poor rainfall in 1981 led to a sharp drop in hydro generation which had to be offset by increased use of diesel plant, resulting in a 40 percent increase in the average cost of electricity production in that year. This higher cost has been a source of concern to the CEB, particularly because electricity tariffs have only increased by 10% since April 1981. This situation should be alleviated after the 15% increase in tariffs that has just been announced. On the supply side, no new CEB plant has been commissioned since the installation of the 2 x 12 MW diesel sets at Port Louis in September, 1981. Work on the Champagne Hydro-Electric scheme is proceeding and the project is expected to be completed by March 1984.

### Electricity Statistics 1980-82

	1980	1981	1982
Maximum demand (MW)	83.5	81.1	86.2
Sales (GWh)	290	291	293
Generation (GWh)	355	362	363
- hydro	82.8	59.7	93.4
- sugar industry purchases	26.7	30.9	43.3
- oil thermal	245.4	271.3	226.1
Average cost per kWh produced (incl. purchases).	0.50 cs	0.72 cs	0.61 cs

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Source: CEB

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- 2.02 In the petroleum subsector, with the exception of fuel oil whose demand is essentially determined by the need for thermal electricity generation, the consumption of all products has been stagnant or declining since 1980. (See table below). The cost of oil imports rose from \$ 57.5 million in 1980 to \$ 67.0 million in 1981 largely because of higher fuel oil use in the power sector but also because of higher unit prices. In 1982, however, lower demand and reduced prices led to a drop in the oil import bill to \$ 54.7 million.
- 2.03 In terms of petroleum supply an important development has been the introduction, in April 1983, of direct Government purchases of about a quarter of the island's internal petroleum product requirements through a bilateral agreement with the Kuwait Petroleum Corporation. The Government is also investigating whether additional procurement on a

Government to Government basis from other oil producing states could help to reduce the cost of the country's oil import requirements.

Petroleum Statistics 1980-82

Product	Consumption (000 barrels) <sup>a/</sup>		
	1980	1981	1982
Gasolines	<u>336.1</u>	<u>310.6</u>	<u>259.7</u>
Gas oil	427.3	447.8	439.8
Kerosene	161.2	132.8	128.7
Fuel oil	448.5	533.8	409.1
Others	<u>42.0</u>	<u>38.2</u>	<u>41.5</u>
Total	<u>1415.1</u>	<u>1643.2</u>	<u>1278.8</u>

a/ Excludes bunker sales.

Source: Shell (Mauritius) Ltd.



### III. STATUS OF ASSESSMENT RECOMMENDATIONS

#### (A) Bagasse Development Program

- 3.01 As indicated above, the major recommendation of the energy assessment report was to embark on a program to expand the use of bagasse for electricity generation. The steps that needed to be taken in this regard were (i) a detailed prefeasibility study which would define more precisely the potential for generating electricity from bagasse, identify any technical or economic obstacles that needed to be overcome and make a preliminary estimate of the investments required; (ii) establish an institutional framework for monitoring and implementing the program and for defining the roles that the various agencies - Government, CEB and sugar factories - would play in this implementation; and (iii) carry out any pilot projects or other tests required to establish the technical and economic viability of pelletizing bagasse to store it for electricity generation in the intercrop period.
- 3.02 To address these questions the Government has taken the following steps. First, a prefeasibility study was carried out in 1981 with French bilateral assistance. This study identified the potential for electricity supply from the various factories, developed alternative scenarios for plant commissioning based on a number of assumptions (including the viability or otherwise of bagasse pelletization) and prepared preliminary cost estimates and an economic evaluation. The study also recommended a pilot project for testing the viability of bagasse pelletization as the next step in developing an overall program. Subsequently, the Ministry of Energy set up a technical committee with representatives from the various agencies concerned, to review this report and prepare a follow-up program. The committee agreed with the need for a pilot pelletization project but, given the uncertainty about the economics of pelletization, it also recommended that the alternative of dual fired burners using bagasse in the crop season and coal in the intercrop period also be explored.
- 3.03 In early 1983 a joint Government/private company was set up to establish a 13,000 tons per year pelletization plant at the Deep River/Beau Champ sugar factory. This plant should be operational by early 1985 and therefore by the end of the 1985 crop season it should be possible to determine with some precision the technical and economic feasibility of bagasse pelletization. In parallel, the FUEL sugar factory has embarked upon a modernization/expansion project with French bilateral assistance, which will enable it to supply 17 MW of firm capacity to the CEB by mid 1984. This project will produce 30 GWh of electricity from bagasse during the crop season but the burners are also designed to burn coal or pellets to produce an additional 25-30 GWh in the intercrop period. To test the relative economics of coal use in these boilers (as compared with bagasse pellets) CEB has entered into an agreement with FUEL to supply it with the coal required to run the boilers for the 1984 and 1985 intercrop periods. The coal is to be imported for the CEB by private companies on a competitive tender basis.

- 3.04 Thus, given these two projects, the relative economics of the main technical options for using bagasse for power generation will be firmly established by the end of 1985. As the economics of a coal fired central power station will also be easily determined at that time, the least cost electric power expansion program could then be prepared for the 1985-1995 period. It is also important to note that by then the preliminary results of the Sugar Commission's work on the rationalization of the island's sugar industry will also be available to enable firm decisions on plant siting to be taken.
- 3.05 Given these factors, the immediate tasks facing the Government are to ensure that the two ongoing projects -- the pilot pelletization plant and the coal/bagasse/pellets plant at FUEL -- proceed on schedule and that their technical and economic aspects are carefully monitored. This will require not only the continued working of the joint bagasse supervisory committee but also the allocation of the necessary resources within the Ministry of Energy to carry out the monitoring and evaluation of these projects and to prepare a long term investment plan based on their results.



(B) Other Recommendations

Action Taken

Petroleum

- (i) Re-examine the resumption of private hydrocarbon exploration and re-evaluate Texaco's exploration results.

The Government has obtained the data acquired by Texaco during its earlier exploration efforts; part of this data is currently being reprocessed and evaluated by consultants under the supervision of the Bank. The results of this analysis will determine the next steps that the Government could take to promote the country's hydrocarbon prospects.

- (ii) Delay any investment in setting up a refinery until the economic/financial feasibility of such a proposal has been carefully evaluated.

Following a careful examination of refinery markets and economics, the Government has decided not to embark on any refinery construction projects in Mauritius in the foreseeable future.

Electric Power

- (iii) Introduce a daylight saving time scheme to even out peak demand during the summer.

Daylight savings time was introduced in 1982. However the resulting savings in the summer of 1982/83 do not appear to have been as large as anticipated and there has been considerable social opposition to this measure. This will therefore be discontinued in 1983.

- (iv) Consider the potential effectiveness of extending the use of peak power pricing to electric cookers, and of staggering working hours of Government and industrial workers.

No action has been taken in this regard.

Coal

- (v) Study the possibility of installing a 29 MW coal-fired power plant.

The costs and feasibility of establishing such a plant have been updated through two studies. However, stagnant electricity consumption in 1981/82

Recommendation

Action Taken

and the possibility of using coal in dual fired boilers in the sugar industry mean that a central coal thermal station will not be required until the late 1980's.

Renewables

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|--|--|
| (vi) Consider investment in solar water heaters for the hotel industry as development expenditures for income tax purposes similar to other development investments. | Provision has now been made to include solar water heaters as development investments for income tax purposes. Import duties on solar water heater components have also been reduced.  |
| (vii) Government should introduce solar water heaters in its commercial and service buildings - hospitals, schools etc.  | No action has been taken so far, although this remains a high priority recommendation.   |
| (viii) Defer investment in ethanol production as a gasoline substitute until the relative economics become more favorable.   | A 60 million litres/year ethanol production project was reviewed by the Government with Bank assistance, but its economics were not found to be sufficiently attractive and investment in this area has been deferred for the time being.  |
| (ix) Investigate the potential of wind energy for water pumping and electricity generation.  | Some wind measurement equipment has been installed in Rodrigues and in Mauritius as a first step in evaluating the potential of this resource. However the implementation of these projects has been slower than anticipated because of technical, institutional and local financing problems. |
| (x) Evaluate the potential of mini hydro sites for electricity generation.   | A draft report of a study to evaluate and rank known mini hydro sites on the island, carried out with UNDP assistance, is being reviewed by the Government.  |



Recommendation

Action Taken

Conservation

- (xi) Evaluate the potential for changing the composition of the public vehicle fleet to more efficient vehicles.
- As part of its expansion and rehabilitation program, the public road transport corporation has acquired new buses which are more energy efficient. However, the potential for improving the efficiency of the public bus fleet and of private bus companies through better maintenance, still needs to be evaluated.
- (xii) Study of the traffic management measures to improve vehicle flow in the Port Louis area.
- Such a study is to be carried out shortly as part of an urban transport project; in the mean time some improved traffic management measures have already been implemented.
- (xiii) Conduct energy audits of large consumers in the industrial and commercial sectors and of Government buildings and facilities.
- No action has been taken in this regard. However, the Mauritius Sugar Industry Research Institute has begun a program of energy audits for the sugar factories. Action in this area, as well as in demand management more generally, remains a high priority in the sector.

Pricing

- (xiv) Continue to enforce realistic pricing policy for energy products to complement energy conservation.
- Retail petroleum product prices have continued to reflect import costs and the Government's desire to encourage conservation. However in the case of electricity tariffs there has been no increase since December 1981 leading to considerable financial problems for the Central Electricity Board. To alleviate these problems the Government has increased electricity tariffs by an average of 15% as from October 1983. A further revision will be made early next year when the results of an ongoing marginal cost pricing study for the power sector become available.

Recommendation

- (xv) Strengthen the institutional framework for energy sector policy and management.

Action Taken

A small energy planning unit was set up in the Ministry of Economic Planning and Development in 1981. In June 1982, as part of an overall program of institutional strengthening, the new Government set up an Energy Policy and Projects Division (EPPD) in the reorganized Ministry of Energy and Internal Communications and transferred the responsibility for energy sector management and coordination to this Ministry. The one staff of the Energy Planning Unit in the Ministry of Economic Planning and Development was also transferred (on secondment) to the EPPD. To help the EPPD develop into an effective sector management body, the UNDP and the Bank and the UK-ODA are providing it with considerable technical assistance (See Section IV below). However, to benefit from this assistance and to carry out the sector management tasks outlined above, the Government urgently needs to allocate budgetary resources to the EPPD so that a core staff of three professionals (an Economist, an Engineer and a Statistician) can be put into place. If, as anticipated, these resources are provided for in the 1983-84 budget to be approved in October 1983, the necessary staff could be on board early next year in time to ensure that the priority activities planned for in the next 12-18 months proceed as scheduled and that their experience is monitored and evaluated. Equally, any further delays or uncertainty in terms of allocating these resources could well result in a slackening of the momentum that has been built since 1980.



#### IV. ONGOING TECHNICAL ASSISTANCE ACTIVITIES

- (i) The World Bank/UNDP have followed up on the Energy Assessment Report through a technical assistance project aimed at strengthening the institutional capacity of the Ministry of Energy for policy formulation and sector management. The project provides funds for a number of short-term consultancy assignments in priority areas as well as for the training of Government staff and for the provision of some basic data analysis and other equipment. A third component of the project, which is being financed in parallel through UK bilateral assistance, is the provision of a resident energy advisor for a 18-24 month period, expected to begin in early 1984. The short term assignments already carried out under the project are (a) a detailed review of the EPPD leading to the preparation of the Division's work program, staffing requirements and job descriptions, equipment and training needs, and (b) the reinterpretation of seismic data originally gathered by Texaco and subsequent advice to the Government on a strategy for exploration promotion.
- (ii) UK Bilateral: as mentioned above, the UK ODA has agreed to provide a resident energy advisor (scheduled to arrive in early 1984) and possibly some short term consultant services in association with the Bank UNDP Project.
- (iii) Franch Bilateral assistance has been provided in developing the bagasse utilization program. In addition to the prefeasibility study carried out in 1981-82, assistance has also been given for the preparation of the pilot pelletization plant; both this plant and the FUEL plant are also being financially supported by the Caisse Centrale.
- (iv) Indian Bilateral assistance is being sought for the provision of short term assistance in petroleum economics and engineering.
- (v) UNDP/IFSTD. A technical assistance program has been started for the evaluation of Mauritius wind energy potential. Monitoring and metering equipment is being installed.

## V. PRIORITY AREAS FOR FURTHER TECHNICAL ASSISTANCE

Given the ongoing and proposed technical assistance activities discussed above, there are only a limited number of areas where further technical assistance is required in the immediate future. These relate mainly to support for programs to identify and implement energy efficiency improvements in the industrial, commercial and Government sector.

- (i) Energy Audits of Hotels and Public Sector Buildings - This exercise will evaluate in detail the potential for reducing energy consumption in hotels, Government offices, hospitals etc. through both better management as well as investments in improving boiler efficiency, insulation etc. The study will also cover the potential for installing solar water heating to replace electric/oil fired heating where appropriate. About two staff months of assistance will be required at a total cost of \$25-30,000.
- (ii) Energy Audits of Large Industrial and Transport Sector Energy Consumers - This study will carry out a similar exercise as in (i) above for the six to eight large industrial energy users (textile firms, the chemical and fertilizer factory, etc.) as well as for the public transport corporation and other large transport agencies. The estimated cost of this study is 3 man-months or about \$35-40,000.
- (iii) Monitoring of Bagasse Development Projects - Once the preliminary results of the FUEL project and the bagasse pelletization project become available, the Government and the CEB may require some short term specialist assistance to help evaluate these results and to develop a medium term power sector investment program. It is difficult to estimate now what the scope of this assistance will need to be, but a preliminary allocation of about three man-months in 1985-86 could be made for programming purposes.
- (iv) Energy Efficiency Improvements in the Sugar Industry - As mentioned in para. III (xiii) above, the Mauritius Sugar Industry Research Institute (MSIRI) has begun a limited program of energy audits in the sugar factories to identify how they could improve the efficiency with which they use steam and electric power. This program needs to be strengthened through the provision of monitoring and metering equipment, data processing facilities and some technical expertise in areas where MSIRI lack trained staff. A detailed proposal of the assistance required is being prepared by the Government and MSIRI for consideration by interested donor agencies.




*file*

## OFFICE MEMORANDUM

October 4, 1983

TO: Visa Office

FROM: Masood Ahmend, EGYEA 

SUBJECT: Visa Requirements for Botswana

1. Before leaving on a mission to Botswana in early September I was told that Bank staff travelling on official business with a Laissez Passer did not require a visa for entry into Botswana. However, upon arriving at Gabarone airport the immigration authorities informed me that this was not the case and initially refused me entry into the country even though I explained to them that the Bank had already checked with, and was acting upon the information received from, their embassy in Washington. After a two hour wait in the arrivals lounge they agreed to call the UNDP Resident Representative who was able to obtain a temporary entry permit for me after which I had to spend a morning at the Central Immigration Office to get a proper visa. I was also told by the UNDP that this was not the first time that they had problems with Laissez Passer holders arriving without a visa.


2. In order to prevent this problem recurring for other staff, I would suggest that the visa requirements for Laissez Passer holders be clarified with the Botswana embassy and that they be asked to ensure that the relevant authorities in Gabarone apply the same requirements.

cc: Ms. Owen (EGYEA)  
Mr. J. Bharier

## OFFICE MEMORANDUM

October 4, 1983

TO: Mr. Julian Bharier, Chief, EGYEA

FROM: Masood Ahmed, EGYEA 

SUBJECT: Mauritius: Energy Planning and Management TA Project -  
Supervision Mission, Back to Office Report

1. I visited Mauritius from September 11 to 16 to supervise the above project and to prepare an overall status report on sector developments since the finalization of the Energy Assessment Report in December 1981. During my stay I met with the new Minister of Energy, Mr. Mahyendrah Utchanah, and with the various officials involved in the sector (See attached list in Annex I). I also met with the UNDP Res Rep and with the British High Commission's staff who are dealing with the recruitment of a proposed resident energy advisor to the Government.

Principal Findings

2. Both the pace of sector developments and the implementation of the UNDP/Bank Technical Assistance Project have been somewhat delayed because of the uncertainty resulting from the March 1983 Government reshuffle and the preparation for the subsequent elections in August 1983. In particular, the expected increase in electricity tariffs, required to improve CEB's financial situation, was postponed until after the election; however, an interim increase of about 15% was announced during my stay and the Government has also indicated that a further tariff revision will be made in early 1984 once the results of an ongoing marginal cost pricing study, being carried out by EDF, become available.

3. A second issue is the delay in staffing the Energy Planning and Projects Division (EPPD) which was set up in the Ministry of Energy to analyze policy and investment options, coordinate the work of sector agencies and act as a focal point for technical and financial assistance in energy. This delay was caused partly by the delay in the approval of the overall 1983/84 Government budget which makes provision for the required staff. However it also reflects some disagreement between the Ministry of Planning and the Ministry of Energy on their respective roles in energy sector planning and management. The previous allocation, agreed at the time of the creation of EPPD, was that the Ministry of Energy would have line responsibility for the preparation of energy policy and investment programs and for the day to day supervision of the CEB and other sector agencies. The Ministry of Planning was to be responsible for vetting these policy and investment proposals to ensure that they were compatible with the Government's overall economic prospects and policies and with resource availability and for ensuring that the energy implications of projects in other sectors were identified and analyzed. This is a perfectly workable division of responsibilities and remains the Government's official position. However, I was told that



the Ministry of Planning is now not convinced of the need for a separate policy and planning unit in the Ministry of Energy and would like to have the whole question reexamined. Partly as a result of this uncertainty, the one key staff member of the EPPD who has been working on energy issues for about four years, has temporarily transferred to the Central Water Authority, although he still spends roughly three-quarters of his time in the Ministry working on urgent tasks which need to be carried out.

4. During my stay, I discussed this question with the various departments involved. The basic point I emphasized was that regardless of how such a unit was organized, located, or staffed (permanent positions, secondment, etc.), there were clearly a number of priority tasks which needed to be done and for which some sort of coordinating/monitoring unit was essential. The most important of these tasks is the monitoring and evaluation of the proposed bagasse pelletization project and the FUEL coal/bagasse utilization plant. As discussed in the Energy Assessment Status Report (draft being circulated in parallel), the comparative results of these projects will essentially determine the shape of the bulk of the power (and energy) investment program for the next decade. Moreover, the successful monitoring and evaluation of these projects requires a multi-disciplinary team (engineering and economic/financial expertise) which views this as one of its principal functions; an ad-hoc committee without a permanent core group is unlikely to be successful.

5. Following these discussions, the Government has indicated that it will take the steps necessary to bring on board a small core of staff in the EPPD by the end of this year. However, the mission recommends that the Bank reemphasize the importance of this matter in a follow-up letter to the Government which could be sent with the final version of the Energy Assessment Status Report.

#### Project Disbursements.

6. The rate of project disbursements has reflected the delays discussed above. Disbursements for work carried out to date amount to about \$31,000 as opposed to the \$77,000 budgeted under the project for calendar 1983. Even allowing for some additional commitments through December, it is clear that actual disbursements will fall short of anticipated levels and the project budget will need to be re-phased at the end of the year. While it is possible to accelerate disbursements (through the execution of the data processing equipment purchases envisaged for this year), this would not be advisable until the EPPD staffing issue has been satisfactorily resolved.

#### Recruitment of ODA adviser.

7. An ODA financed adviser was supposed to arrive in mid 1983 to help in the establishment of EPPD and to provide on the job training for its staff. Recruitment of a suitable candidate by ODA has, however, proved to be a slow process. I was told by the British High Commission's

staff that the current expectation is that someone will be recruited by the end of 1983 for arrival in Mauritius by spring '84. Given the delay in the local staffing of the EPPD, the current schedule for the arrival of the resident advisor would not cause any significant problems.

Energy Assessment Status Report.

8. A draft of this report was prepared in the field and discussed with the Government. It is now being circulated for internal review and clearance in the Bank. The Government has cleared this draft for distribution in final form. However, we agreed that the draft would be resubmitted to them for clearance if the internal Bank review resulted in substantive changes.

Next Steps.

9. The Energy Assessment Status Report will be sent to the Government following internal review and clearance. I will continue to press ODA to make progress on recruiting an energy adviser.

10. Assuming that the EPPD staffing question is resolved by the end of the year and an adviser is on board by spring 84, the next supervision mission for the project should be scheduled for June/July '84.

M. Ahmed/ccl

cc: Messrs. Gulhati, Sandberg (EANVP) Gue, Payson,  
Schott, Chadwick (EA2) Wyss, Bronfman, Shaukat,  
Nekby (EAP) Kohli, Gamba (IND) Rovani, Sadove,  
Sheehan, Rao, Bourcier, Fish, Dosik, Heron, Saunders,  
Ms. Vaughn (EANVP), Ms. Uluatam (WA2)

EGYEA Staff



Annex I

List of Persons Met

The Honorable M. Utchanah,	Minister of Energy & Internal Communications
The Honorable A. Gayan,	Minister of External Affairs
The Honorable C. Pillay,	Minister of Industry
Mr. M. Baguant,	Financial Secretary
Mr. D. Manna,	Ministry of Finance
Mr. K. Sumodhee,	PS, Ministry of Energy
Mr. R. Kisnah,	Ministry of Energy
Mr. J. Labat,	General Manager, CEB
Mr. R. Closel,	Chief Engineer, CED
Mr. F. Piat,	General Manager, Shell
Mr. Leclezio,	Doger de Speville Co.
Mr. A. Ahmad,	President, Chamber of Commerce
Mr. S. Marie-Jean,	Mauritius Sugar Industry Research Institute
Mr. H. Danisman,	UNDP Resident Representative
Mrs. Yang,	UNDP Program Officer
Mr. C. Thompson,	British High Commission
Mr. Rajagopalan,	Indian High Commission

*Chron*

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TO:

BOOK OF TWO

(1) DR. BERTHOLD PILZ, GTZ,  
FRANKFURT MAIN, GERMANY

(2) DR. BERNAUER, GTZ,

FRANKFURT MAIN, GERMANY

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TO: [REDACTED]

(AAA) FOLLOWING YOUR SUGGESTIONS AT OUR MEETING ON SEPTEMBER 13, I AM PLEASED TO PROVIDE YOU WITH A LIST OF POTENTIAL TECHNICAL ASSISTANCE PROJECTS THAT COULD BE FINANCED BY YOUR GOVERNMENT THROUGH BILATERAL ARRANGEMENTS. YOU WILL APPRECIATE THAT ALL OF THESE PROJECTS REQUIRE FURTHER PREPARATORY WORK AND THAT THE ESTIMATES OF COST AND IMPLEMENTATION SCHEDULES MUST NECESSARILY BE APPROXIMATE AT THIS STAGE. (BBB) THE SIX PROJECTS THAT WE WOULD LIKE TO PROPOSE FOR YOUR CONSIDERATION ARE AS FOLLOWS. (1) TANZANIA. POWER SECTOR EFFICIENCY IMPROVEMENT PROJECT. THIS PROJECT WOULD FUND LOW COST IMPROVEMENTS TO EXISTING THERMAL GENERATING PLANT TO IMPROVE THEIR OPERATING EFFICIENCY. IT WOULD ALSO PROVIDE TECHNICAL ASSISTANCE TO HELP ESTABLISH AN EFFECTIVE LONGER TERM PROGRAM TO REDUCE ELECTRICITY LOSSES IN THE TRANSMISSION AND DISTRIBUTION SYSTEM. BASED ON OUR EXPERIENCE IN OTHER COUNTRIES THIS PROJECT WOULD COST BETWEEN USDOLLARS 0.5 AND 1.0 MILLION AND THE IMPLEMENTATION PERIOD WOULD BE ABOUT 18 TO 24 MONTHS. (2) SEYCHELLES. POWER SECTOR EFFICIENCY IMPROVEMENT. THE FOCUS OF THIS PROJECT WOULD BE SIMILAR TO THE ONE FOR TANZANIA ABOVE. HOWEVER, GIVEN THE SMALL SIZE OF THE SEYCHELLES POWER SYSTEM, THE PROJECT WOULD ALSO

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INCLUDE MORE EXTENSIVE REHABILITATION AND MODERNIZATION OF EXISTING GENERATING PLANT AND COULD ALSO INCLUDE PROVISION OF SPARE PARTS. PROJECT COST WOULD BE IN THE RANGE OF USDOLLARS 0.5 TO 1.0 MILLION AND IMPLEMENTATION PERIOD WOULD BE 18 TO 24 MONTHS. (3) SUDAN. NATIONAL FOREST INVENTORY. NO ACCURATE ESTIMATES OF WOOD RESOURCES AND THEIR RATE OF DEPLETION IS AVAILABLE IN SUDAN AND THIS IS A SERIOUS BOTTLENECK IN DEVELOPING A RATIONAL WOOD USE AND PRODUCTION STRATEGY. AN INVENTORY OF THREE PROVINCES IS TO BE CARRIED OUT WITH CANADIAN ASSISTANCE. THIS PROJECT WILL EXTEND THE WORK TO THE REMAINING PROVINCES TO PROVIDE THE GOVERNMENT WITH AN UP-TO-DATE AND COMPREHENSIVE FOREST RESOURCE INVENTORY. THE ESTIMATED COST IS DOLLARS 1.0 MILLION AND THE PROJECT WOULD TAKE 12 TO 18 MONTHS TO IMPLEMENT. (4) SENEGAL. ESTABLISHMENT OF AN ENERGY CONSERVATION PROGRAM FOR MAJOR INDUSTRIAL AND COMMERCIAL USERS. THE PROJECT WOULD PROVIDE TECHNICAL EXPERTISE, METERING AND OTHER EQUIPMENT AND LOGISTICAL SUPPORT TO THE DEPARTMENT OF ENERGY TO ESTABLISH SUCH A PROGRAM. LARGE POTENTIAL SAVINGS FROM THE PROGRAM HAVE ALREADY BEEN IDENTIFIED BY A NUMBER OF STUDIES OF ENERGY USE IN SENEGAL. THE ESTIMATED COST OF THE PROJECT WOULD BE USDOLLARS 350-500,000 AND IT WOULD BE IMPLEMENTED OVER 24 TO 36 MONTHS. (5) PERU. PILOT

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**TO:**  
PROJECT FOR COAL BRIQUETTING FOR USE AS HOUSEHOLD/COMMERCIAL FUEL. THIS PROJECT WOULD HELP TO DEFINE THE TECHNICAL AND ECONOMIC PARAMETERS OF DEVELOPING SMOKELESS COAL BRIQUETTES FOR USE AS A KEROSENE/WOOD SUBSTITUTE FOR HOUSEHOLD FUEL NEEDS. THE PROJECT WOULD ALSO LEAD TO A SECOND PHASE FOR THE DEMONSTRATION OF COAL STOVES AND ASSISTANCE TO LOCAL ENTREPRENEURS FOR PRODUCING BOTH THE BRIQUETTES AND THE STOVES. THE ESTIMATED COST IS BETWEEN USDOLLARS 0.5-0.75 MILLION AND THE IMPLEMENTATION PERIOD WOULD BE 18 TO 30 MONTHS. (6) NIGER. IMPROVING EFFICIENCY OF ENERGY USE IN GOVERNMENT OFFICES AND COMMERCIAL BUILDINGS. THE PROJECT WOULD IDENTIFY AND IMPLEMENT LOW COST MEASURES TO IMPROVE THE ENERGY EFFICIENCY IN THIS SECTOR (MAINLY FOR AIR CONDITIONING). IT WOULD ALSO COVER A SMALL PILOT PROGRAM TO REPLACE CONVENTIONAL AIR CONDITIONING UNITS WITH HUMIDIFIERS OR "DESERT COOLERS" WHOSE ENERGY REQUIREMENTS ARE MUCH LOWER AND WHICH WOULD PROVIDE AN ACCEPTABLE LEVEL OF COMFORT IN MANY INSTANCES IN THE NIGERIAN CLIMATE. THE PROJECT WOULD COST BETWEEN USDOLLARS 0.75 AND USDOLLARS 2.0 MILLION DEPENDING ON THE SIZE OF THE PILOT DESERT COOLER PROGRAM. IT WOULD REQUIRE 18 TO 30 MONTHS TO IMPLEMENT. (CCC) AS WE DISCUSSED AT OUR MEETING, WE WOULD BE HAPPY TO CARRY OUT THE NECESSARY PREPARATORY WORK ON THESE

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TO: PROJECTS AS PART OF OUR ENERGY SECTOR MANAGEMENT PROGRAM ACTIVITIES  
 IN 1984. WE ESTIMATE THAT THE AVERAGE COST OF SUCH PREPARATORY  
 WORK WOULD BE ABOUT USDOLLARS 80,000 PER PROJECT. (DDD) WE LOOK  
 FORWARD TO HEARING FROM YOU AND WILL BE HAPPY TO PROVIDE ANY  
 FURTHER INFORMATION OR CLARIFICATION YOU MAY REQUIRE ON THIS MATTER.  
 BEST REGARDS JULIAN BHARIER, CHIEF, ASSESSMENTS DIVISION, ENERGY  
 DEPARTMENT, WORLDBANK

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CLASS OF SERVICE:	<b>TELEX</b>	TELEX NO.:	<b>4 1 523-0 GTZ D</b>	DATE:	<b>Sept.23/83</b>
SUBJECT:	<b>ESMP - TA</b>		DRAFTED BY:	<b>Mahmed:ks</b>	
CLEARANCES AND COPY DISTRIBUTION:			AUTHORIZED BY (Name and Signature):		
			<b>Julian Bharier, Chief, EGYEA</b>		
			DEPARTMENT:		
			<b>ENERGY</b>		
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Mr. Bourcier

*Chiron*

September 23, 1983

Philippe,

Re: ESMP - PNG Institutional Review

You asked Hal whether the proposed institutional review could be financed through the Petroleum Exploration Technical Assistance Project.

The position is as follows. At the time of project appraisal it was agreed that the Government would carry out at some stage an internal review of the institutional arrangements for petroleum exploration and development but no funds were provided for this as the review was expected to be an internal one. Following the Assessment Status Report Mission in June 1983, the Government agreed that an outside review was required and that it would need to cover not just petroleum but DME's overall energy sector operations. However, they stressed that they would like the review to be carried out by Bank staff or consultants working for the Bank rather than by a Management Consultancy firm. The proposed review responds to that request.

Now this mission as proposed could be financed using the project's funds but this would require a more cumbersome procedure (Prasad & Dumestre would have to enter into separate individual contracts with the Government of PNG and Alahdad could not be covered as a Bank staff member) and could also delay the exercise. Given the small amount of money involved I believe that it would be more expedient to use the ESMP mechanism. Gene (whose staff have been involved in the preparation of this activity and in identifying Dumestre) also agrees. We are also trying to ensure that Veda can overlap with this mission in the field.

Please call if I can clarify further.



Masood

cc & cleared with: Mr. Wackman (EGYEA)  
cc: Mr. McCarthy (EGYD1)

Masood

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TELETYPE UNIT (FOR CABLE SECTION USE ONLY)

TO: MR. RENE NOEL, CARE LONRHO (MAURITIUS)

LIMITED, PORT LOUIS, MAURITIUS. REURTELEX SEPTEMBER 22. PACKET CONTAINING YOUR PAPERS WAS GIVEN TO GOVERNMENT DRIVER (TO PASS ON TO YOU) ON MY WAY BACK TO AIRPORT ON FRIDAY, SEPTEMBER 16. PLEASE CONTACT MR. KISNAH IN THE MINISTRY OF ENERGY IN CASE YOU HAVE NOT RECEIVED IT SO FAR. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLD BANK.

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SUBJECT:	DRAFTED BY:		<b>MAhmed:jl</b>		
CLEARANCES AND COPY DISTRIBUTION:	AUTHORIZED BY (Name and Signature):		<b>Masood Ahmed, EGYEA</b>		
	DEPARTMENT:		<b>Energy Department</b>		
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MSGG NO. 4823

ATTENTION MR MANSOOS AHMED  
DEPARTMENT OF ENERGY  
THE WORLD BANK

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THE ENVELOPE ADDRESSED TO ME WHICH WAS INADVERTENTLY GIVEN TO YOU  
WHEN WE MET IN PORT LOUIS AND TO CONFIRM MY REQUEST THAT YOU  
KINDLY AIRMAIL IT TO ME C/O LONRHO (MAURITIUS) LTD - P.O. BOX  
159 - PORT LOUIS, MAURITIUS.

YOUR ACKNOWLEDGEMENT WOULD BE GREATLY APPRECIATED.

THANKS AND BEST REGARDS

E. L. RENE NOEL  
TELEX 4212 OUTPOST IW

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TO: MR. RENE NOEL, CARE LONRHO (MAURITIUS)

LIMITED, PORT LOUIS, MAURITIUS. REURTELEX SEPTEMBER 22. PACKET  
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WORLD BANK.

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Masood Ahmed, EGYEA

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Energy Department

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THE WORLD BANK

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THANKS AND BEST REGARDS

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E. L. RENE NOEL  
TELEX 4212 OUTPOST IW

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ATTENTION MR MANSOOS AHMED  
DEPARTMENT OF ENERGY  
THE WORLD BANK

THIS IS TO MAKE SURE THAT YOU HAVE RECEIVED MY MESSAGE CONCERNING  
THE ENVELOPE ADDRESSED TO ME WHICH WAS INADVERTENTLY GIVEN TO YOU  
WHEN WE MET IN PORT LOUIS AND TO CONFIRM MY REQUEST THAT YOU  
KINDLY AIRMAIL IT TO ME C/O LONRHO (MAURITIUS) LTD - P.O. BOX  
159 - PORT LOUIS, MAURITIUS.

YOUR ACKNOWLEDGEMENT WOULD BE GREATLY APPRECIATED.

THANKS AND BEST REGARDS

E. I. RENE NOEL  
TELEX 4212 OUTPOST IW

4212 OUTPOST IW

=09220950

NNNN



## OFFICE MEMORANDUM

TO: Distribution DATE: September 21, 1983

FROM: Masood Ahmed, EGYEA

SUBJECT: ESMP: Activity Initiation Report  
Papua New Guinea - Energy Sector Institutional Review

1. An Energy Assessment Status Report for Papua New Guinea was issued in July 1983. This report reviewed the status of implementation of the various recommendations made by the November 1981 Energy Assessment Mission, and it identified the priority areas where additional technical assistance was required. The highest priority was attached to a review of the role, structure, staffing, technical assistance and training needs of the Department of Minerals and Energy (DME) to enable it to fulfill its responsibilities as the main energy policy formulation and management body in the Government. Weaknesses in these areas are becoming an increasingly important bottleneck for effective sector management and resource development, particularly in the petroleum sub-sector where the relevant divisions 1/ of DME are now unable to cope with the increasing level of exploration and development activity. Inadequacy of institutional arrangements are also reflected in the relationship between DME and the Electricity Commission (ELCOM) in aspects such as the evaluation of the potential for natural gas utilization for power generation.

2. As indicated in the Energy Assessment Status Report, the Government of PNG has requested that such a review be urgently carried out under the Energy Sector Management Program and the proposed activity is a response to that request. This review would cover: (i) the institutional structure (relationships and responsibilities) within and among the concerned divisions of DME as well as relationships with external agencies such as ELCOM; (ii) staffing, training and technical assistance needs within DME; and (iii) information systems and equipment requirements. The mission would recommend a restructured framework which could serve as a basis for obtaining necessary Government sanctions to strengthen the capability of DME through appropriate changes in the overall structure and responsibilities of institutions and individual positions, by deployment of suitably qualified staff with access to training programs tailored to their specific needs, supplemented by clearly defined Technical Assistance requirements and supported by a streamlined management information system. The review would also help fulfill the requirements of a covenant under the Bank's ongoing Petroleum Technical Assistance Project, which requires a study to be carried out by July 1, 1983 on the optimal institutional set-up for oil exploration followed by the implementation of recommendations of the study as agreed to by the Government and IDA.

---

1/ Division of Mines; Policy and Planning Division; and Geological Survey Division.

3. The proposed review will be carried out by a mission comprising Messrs. N.B. Prasad (mission leader, consultant), Ziad Alahdad (energy planner), and Andre Dumestre (petroleum specialist, consultant). They would visit PNG for a period of three weeks beginning about October 23, 1983. Draft terms of reference for the mission are attached.

4. The estimated cost of this activity is US\$50,000.

5. Please send any comments on this exercise to Mr. Alahdad (Ext. 75272) or to myself (Ext. 74545).

Attachment

Distribution

Messrs. Jaycox, Dutt, Berlin (AEA); Turnham, Beach, Cordukes, Aguilar (AEP); Rovani, Rao, Bourcier, Sadove, Sheehan, Bharier, McCarthy, Dosik, Fish, Heron, Saunders, Wackman, Fitzgerald, Alahdad (EGY); Ms. Farmer (AEA); Ms. Vedavalli (EGY)

ZAlahdad:jl



DRAFT

TO: Messrs. N.B. Prasad (Consultant)  
Z. Alahdad (EGYEA)  
A. Dumestre (Consultant)

DATE:

FROM: Harold Wackman, Acting Chief, EGYEA

SUBJECT: Papua New Guinea: Energy Sector Institutional Review Mission  
Terms of Reference

Background and Objectives

1. You will arrive in Port Moresby on or about October 23, 1983 for approximately 3 weeks to carry out a review of the institutional arrangements for energy sector management. This review will focus on the Department of Minerals and Energy (DME) which has the primary responsibility for energy policy formulation and sector management. The three divisions of DME which are directly involved in energy work are the Geological Survey Division, the Policy and Planning Division and the Division of Mines. Also contributing to the energy policy formulation process are a number of other bodies/committees whose membership represents a cross-section of ministries (including DME) and other important government controlled organizations. Other bodies active in the energy sector include the Petroleum Advisory Board (PAB), the National Energy Planning Council, and the Electricity Commission (ELCOM) whose chairman reports to the Minister of DME.

2. The principal objective of the proposed review is to determine the framework of activities of the three divisions under DME involved in energy policy work and their operational parameters including: (i) organization and staffing; (ii) training and technical assistance requirements; (iii) identification of mechanisms for coordination of

policies and projects handled by the various institutions involved in the sector; and (iv) identification of any equipment needed to establish an effective data collection and assimilation and project monitoring system. The mission's report should address these issues in detail, giving due emphasis to the increasing role of the petroleum sub-sector in terms of financial and manpower requirements.

Scope of Work

3. The mission's analysis should cover the following broad aspects:
- institutional structure;
  - staffing, training and consultancy needs;
  - information systems and equipment requirements.

These areas are dealt with in detail below:

A. Institutional Structure The Mission would undertake:

- (i) a detailed review of the organizational structure of the energy-related divisions of DME, namely, Division of Mines, Policy and Planning Division (including EPU), and the Geological Survey Division. A review of the relationships between DME and other agencies directly or indirectly associated with energy policy/project work such as ELCOM, private oil companies, etc;
- (ii) a brief review of the roles, organizational structure and inter-relationships of institutions other than the DME to the extent that this review facilitates the identification of inter-relationships;



- (iii) an analysis of the effectiveness of existing arrangements within DME and between it and other institutions. This should take account of aspects such as quality and speed of decision-making, quantity of output, ease of coordination, procedural and other bottlenecks, etc. It should also take into account the likely scope of DME's responsibilities in the future as PNG's petroleum resources are developed;
- (iv) development of a restructured model for the organization of DME and its energy-related divisions and proposed inter-relationships with external institutions. Revised organograms, decision flow charts and other necessary means could be used to demonstrate the working of the proposed model. The proposed model may call for a modification or redefinition of the terms of reference of DME and its energy-related divisions as well as the terms of inter-relationships with external institutions. Roles of committees and working groups may also need to be modified or redefined. It is important to note that any recommendations must be reasonably practicable and implementable. Where a more radical approach is needed, the recommended rectification measures would be phased over an acceptable period of time; and

- (v) a qualitative assessment of the benefits of the proposed model.

B. Staffing, Training and Consultancy Needs The Mission would undertake:

- (i) a review of existing staffing policies within DME and other energy policy organizations. This would include, inter-alia, recruitment policies, terms and conditions, personnel assessment and promotion policies, salary levels, civil service heirarchy patterns;
- (ii) a review of the existing staff positions with an assessment of the degree of professionalization within DME and its energy-related divisions. Job descriptions of various positions would be reviewed;
- (iii) an identification of existing issues and suggestions for restructuring. This would include an assessment of the need to augment the existing staff capability through further recruitment, secondment, redeployment, promotion, or retrenchment;
- (iv) an identification of training needs (to the extent that they can be identified in the event of existing short-staffing). Training needs would be established on the basis of potential shortcomings of personnel available in the market at recommended salary levels. Types of training could conceivably cover



augmentation of professional skills in basic disciplines and more specialized training in areas such as petroleum management, project management, industrial energy conservation and systems analysis: and

- (v) identification of technical assistance and consultancy needs. This would include preparation of terms of reference for proposed consultancy services with an estimation of costs. Use of consultants would supplement or complement existing and proposed expertise and wherever possible, include an element of local counterpart training.

C. Information Systems and Equipment Requirements The Mission

would:

- (i) review the existing information system for DME's energy related divisions as well as the information flow in the energy sector in general and identify existing data sources;
- (ii) identify immediate and medium term energy information needs against a backdrop of current energy sector issues;
- (iii) based on (i) and (ii), formulate recommendations to modify and/or supplement existing information flow to meet the management needs of DME;
- (iv) prepare an outline format for the proposed energy data base and a flow model of the proposed energy management information system;

- (v) review the computer/micro-computer systems currently in use. Identify the areas in which EDP support may be necessary (e.g. economic analysis of projects, project management by PERT/CPM, energy balance updates). Recommend modification/augmentation/replacement of existing hardware and software packages with budget cost estimates of the proposed changes; and
- (vi) identify any other equipment and information needs such as business machines, subscriptions to international technical journals, etc.

#### Individual Responsibilities

4. The specific responsibilities for the Mission members are as follows: Mr. Prasad will lead the mission and provide overall guidance and direction with particular emphasis on organizational framework and responsibilities. He will also be responsible for reviewing the institutional interface between DME and ELCOM as well as other institutions/committees involved in the energy sector. Mr. Dumestre will provide institutional and technical support on the petroleum sub-sector including the preparation of job descriptions for staff and terms of reference for consultants and other technical assistance as well as identifying specific training and equipment needs. Mr. Alahdad will have the primary responsibility for reviewing the institutional, staffing, technical assistance and training aspects of DME's involvements in the development of non-petroleum energy sources and in energy utilization and economics. He will also be responsible for compiling the mission's final report and will therefore need to be involved in the specific areas covered by the other mission members.



BOOK OF TWO (SEE ATTACHED TEXT)

1. MR. T.P. SVENNEVIG (TX 856-71004 NOREG N)  
 DIRECTOR GENERAL  
 DEPARTMENT OF INTERNATIONAL AND SOCIAL DEVELOPMENT  
 MINISTRY OF FOREIGN AFFAIRS  
 OSLO, NORWAY

2. MR. OLE SCHISTAD (TX 18532 N)  
 HEAD OF DEPARTMENT  
 INTERNATIONAL ORGANIZATION AND PROJECT FINANCING  
 THE EXPORT COUNCIL OF NORWAY  
 OSLO, NORWAY

END OF TEXT

NOT TO BE DISSEMINATED

CLASS OF SERVICE	TELEX NO:	DATE:
SUBJECT:	DRAFTED BY:	
CLEARANCE AND COPY DISTRIBUTION:	AUTHORIZED BY (Name and Signature)	
	DEPARTMENT:	
CHECKED FOR DISPATCH		

I WOULD LIKE TO EXPRESS AGAIN OUR APPRECIATION FOR YOUR SUPPORT OF OUR ENERGY SECTOR ASSESSMENT AND ENERGY SECTOR MANAGEMENT PROGRAMS. SINCE YOU ARE PARTICULARLY INTERESTED IN THE SCADC COUNTRIES I WOULD LIKE TO BRING TO YOUR ATTENTION AN IMPORTANT PROJECT IN ZAMBIA/ZIMBABWE, WHICH WILL HAVE MAJOR BENEFITS FOR ELECTRIC POWER DEVELOPMENT ALONG THE ZAMBESI RIVER. (AAA) THE GOVERNMENTS OF ZAMBIA AND ZIMBABWE HAVE INITIATED A REVIEW OF THE PRESENT AND FUTURE ROLE AND THE EFFECTIVENESS OF THE CENTRAL AFRICAN POWER CORPORATION (CAPCO), THE AGENCY RESPONSIBLE FOR JOINT HYDRO-POWER DEVELOPMENT OF THE ZAMBESI RIVER. FOR THIS REVIEW, THE GOVERNMENTS HAVE INSTITUTED A NINE-MEMBER BILATERAL COMMITTEE COMPRISING FOUR REPRESENTATIVES FROM EACH COUNTRY AND AN OUTSIDE CHAIRMAN. (BBB) IN RESPONSE TO THE GOVERNMENTS' REQUEST, (1) THE WORLD BANK HAS IDENTIFIED AND NOMINATED THE CHAIRMAN FOR THE COMMITTEE AND (2) THE JOINT UNDP/WORLDBANK ENERGY SECTOR MANAGEMENT PROGRAM HAS FINANCED A RECONNAISSANCE MISSION BY THE CHAIRMAN TO ZAMBIA AND ZIMBABWE IN AUGUST 1983 TO DEFINE MORE CLEARLY THE SCOPE OF WORK AND DETERMINE SPECIFIC TECHNICAL ASSISTANCE (TA) REQUIRED TO SUPPORT THE WORK OF THE COMMITTEE. (CCC) DURING ITS PRELIMINARY MEETINGS, THE COMMITTEE HAS DEFINED ITS SCOPE OF WORK, BROADLY

END OF TEXT

NOT TO BE TRANSMITTED

CLASS OF SERVICE	TELEX NO.	DATE
SUBJECT	DRAFTED BY:	
CLEARANCE AND COPY DISTRIBUTION	AUTHORIZED BY (Name and Signature):	
	DEPARTMENT:	
	CHECKED FOR DISPATCH:	



IDENTIFIED AREAS FOR TA SUPPORT, DEVELOPED AN OUTPUT-ORIENTED PLAN OF ACTION OVER THE SIX-MONTH PERIOD OF THE EXERCISE AND ALLOCATED PRECISE RESPONSIBILITIES TO EACH OF ITS MEMBERS FOR DEALING WITH TECHNICAL, FINANCIAL, ADMINISTRATIVE AND LEGAL ISSUES. (DDD) TA CONSULTANCY SUPPORT WILL BE REQUIRED FOR THE TECHNICAL MEMBERS OF THE COMMITTEE IN THE FORM OF A LOAD DISPATCH STUDY FOR THE CAPCO POWER SYSTEM. THIS STUDY IS ESTIMATED TO COST BETWEEN USDOLLARS 150,000-200,000 AND SHOULD BE STARTED IN NOVEMBER 1983. WE WOULD APPRECIATE YOUR ADVISING US OF THE POSSIBLE INTEREST OF NORAD IN FINANCING THIS STUDY UNDER BILATERAL ARRANGEMENTS ON THE ASSUMPTION THAT SUITABLE CONSULTANTS FROM NORWAY WOULD UNDERTAKE THE STUDY UNDER THE GENERAL SUPERVISION OF THE COMMITTEE. (EEE) IF YOU ARE INTERESTED, WE SHALL ADVISE YOU OF MORE PRECISE COST ESTIMATES AND OTHER DETAILS SUCH AS SCOPE OF THE STUDY, ITS TIMING, SKILLS REQUIRED AND MAN-MONTH ESTIMATES WHICH ARE LIKELY TO BECOME AVAILABLE FOLLOWING THE NEXT COMMITTEE MEETING SCHEDULED FOR MID-OCTOBER. (FFF) IN THE MEANTIME, WE WOULD APPRECIATE YOUR EARLY RESPONSE TO THE ABOVE. BEST REGARDS JULIAN BHARIER, CHIEF ASSESSMENTS DIVISION, ENERGY DEPARTMENT, WORLDBANK

END  
OF  
TEXT

NOT TO BE REPRODUCED

CLASS OF SERVICE	TELEX	TELEX NO.	AS STATED	DATE	Sept. 9/83
SUBJECT	ESMP - Zambia/Zimbabwe TA		DEPT. DIV. JBharier:ks		
CLEARANCES AND COPY DISTRIBUTION		AUTHOR <i>Julian Bharier</i> Julian Bharier, Chief, EGYEA			
cc: Mr. Messenger (EA1) Mr. M. Ahmed (EGYEA)		DEPARTMENT ENERGY			
CHECKED FOR DISPATCH					

*Ms. Saunders check*  
→  
*Jib.*

September 2, 1983

Mr. Yves Rovani, Director, EGY

Masood Ahmed, EGYEA

74545

American Gas Association - Article Based on ETDC

I received a call today from Mr. Kalisch of the American Gas Association who told me that he had read ETDC and would like to publish a section on natural gas from it in their monthly journal. I told him that in principal that sounded like a good idea but that I would also like to include two boxes in the article. One describing what ETDC as a whole is all about, and a second describing briefly the Bank's Energy Program. I also told him that once I had got the appropriate clearances within the Bank, we would get back to him next week so that he could begin preparing the edited version of the article. He will then send us this version for our clearance before publishing.

I have spoken to Robert Saunders and Afsaneh Mashayekhi and she will get in touch with IPA early next week to get their views before calling Mr. Kalisch.

cc: Messrs. Bourcier, Saunders, Ms. Mashayekhi (EGY)

MA:cah



*Mr. Ahmed's check.*

*→  
Jib.*

September 2, 1983

Mr. Yves Rovani, Director, EGY

Masood Ahmed, EGYEA

74545

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I have spoken to Robert Saunders and Afsaneh Mashayekhi and she will get in touch with IPA early next week to get their views before calling Mr. Kalisch.

cc: Messrs. Bourcier, Saunders, Ms. Mashayekhi (EGY)

MA:cah

Chron

September 2, 1983

D.C.:

Re: EDI Seminar

Assuming that the participants will actually be PS Energy or equivalent (and I think that it's important not to accept lower tier substitutes such as head of energy planning units because then the structure/concent of the seminar would need to be very different) then, the principle objectives of the seminar should be:

- (i) raise their commitment in areas which we believe are being neglected (rural energy fuelwood);
- (ii) expose them to new approaches/opportunities for better management in areas where there is likely to be interest in principle (rational energy pricing, conservation, power system efficiency) and
- (iii) provide some guidance and an opportunity to share their experience on how to deal with problems that they have to resolve in person (how to deal with power utilities, oil companies, etc.).

The way to do this is to be selective in coverage and adopt a very practical approach in each session. These people don't need a general course on each aspect of energy or on the first principles of pricing, rural energy, etc. which they ought to know already.

The issues I would focus on in each category are:

- (i) Commitment
  - Fuelwood and rural energy--focus on need to translate general commitment to specific decisions on investment priorities; other areas of action include land allocation decisions, fuelwood pricing (why and constraints), institutional importance (have someone/group with specific responsibilities for this work);
  - Pricing - focus on relative pricing issues, on power pricing (internal cash generation requirements, lifeline tariffs as a way of mitigating equity effects); try and avoid general praise of marginal cost pricing which tends to turn many policymakers off, rather focus on why prices need to be increased and rationalized and how this can be done at minimum political/social cost.



(ii) New Approaches

- Power Sector Efficiency - Why important (demonstrate potential) how to achieve it (audit, loss reduction, maintenance, spare parts) - basic method is to use a number of case study examples and then to give them a list of things that can be done and conditions under which these things are likely to pay off.
- Conservation - Again focus on how rather than why, what to do beyond audits--institutional problems in setting up a conservation program--alternative approaches; also principal opportunities--large users, Government buildings.
- Renewables - How to rationalize programs, (most PS's now aware that existing approach ain't working!) What three or four technologies hold early payoffs--how to work on developing them--how to get the National Science Councils out of monopolizing renewable policy and resource allocation.
- Investment Programing - Assessments the only way to start (well, almost!). How to set up project monitoring and evaluation systems PERT/CPM, etc.

(iii) Problems they Deal with:

- Relationship with Utility and NOC--how to set up information exchange; autonomy vs. control, contract plans, etc.--(NB - this is an area in which we might have only limited wisdom to offer but shared experiences should be useful).
- Relationship with IOC's--we can say much more here: contractual arrangements, legal framework, exploration promotion, etc. (usual Palsen briefing).
- Relationship with Ministry of Finance/Planning--how to ensure that economic aspects of pricing policy are considered as well as fiscal ones; how to make a case for higher energy investments when total budgets are stagnant; how to ask for and justify more staff in energy sector management and also higher salaries.

Now, regarding structure of seminar,

- agree with JB that sessions 3-5 are not likely to be productive; if included, they should be towards the end of the week not the beginning.

- other sessions could be organized along above themes; not by systematic treatment of each subsector;
- important that seminar presenter also participate in the group discussion which should really focus on how to apply the ideas presented in the various country situations.



Masood Ahmed

cc: Messrs. Rovani, Bharier


*incoming is with YR's app.*



## OFFICE MEMORANDUM

TO: (1) Ms. F. Monceaux, EA2  
(2) Mr. N. Fostvedt, EGYD2

DATE: September 1, 1983

FROM: Masood Ahmed, EGYEA SUBJECT: Energy Sector Management Program (ESMP) -  
Burundi: Petroleum Supply Management

Enclosed is a copy of the draft report on Burundi: Petroleum Supply Management, submitted by consultant, Michel Rocheron. I would appreciate your comments on this report by Friday, September 9. A meeting is planned on September 13 or 14 to discuss this report and you will be advised of the precise time and place of the meeting. Mr. Rocheron is also expected to participate in the meeting.

Attachment

cc: Messrs. Hughart, Ferrouki (EGYEA)

ZAlahdad:jl

## OFFICE MEMORANDUM

TO: Distribution

DATE: September 1, 1983

FROM: Masood Ahmed, EGYEA



SUBJECT: ESMP: Activity Initiation Report  
Papua New Guinea - Power Tariff Study Including  
 Cogeneration/Autogeneration

1. One of the findings of the recent energy sector status review mission was that a system of uniform national tariffs for electricity had replaced the previous cost-based structure and, as a result, a number of fuel substitution anomalies had arisen. In particular, the prevailing combination of electricity tariffs and standby charges appeared to be impeding the development of economic options for cogeneration and autogeneration in the private sector. To resolve these issues, and to promote a balanced development of private and public sector least-cost power supply options, a study is required to review the existing power tariff structure, policies and regulations with particular reference to cogeneration/autogeneration.

2. In accordance with the request of the PNG Government, we proposed to finance such a study under the Energy Sector Management Program. Terms of reference are attached for your comments. The study would be carried out by a consultant who would visit PNG starting late September/early October for a period of five weeks followed by two weeks of report preparation. This timetable will allow for some of the recommendations of this study to be incorporated into the Electricity Commission's FY 85 draft budget which would be under preparation in late October.

3. This task is expected to cost between US\$25,000-30,000.

4. Please send any comments on this to Mr. Alahdad (Ext. 75272) or to myself (Ext. 74545).

Attachment

Distribution:

Messrs. Jaycox, Dutt, Berlin, (AEA);  
 Turnham, Beach, Cordukes, Aguilar, (AEP);  
 Rovani, Rao, Bourcier, Sheehan, Sadove, Dosik, Bharier, McCarthy,  
 Fish, Heron, Saunders, Wackman, Fitzgerald, Alahdad, (EGY);  
 Ms. Farmer (AEA), Ms. Vedavalli (EGY).

ZA/jl



OFFICE MEMORANDUM

TO:

DATE:

FROM: Julian Bharier, Chief, EGYEA

SUBJECT: Papua New Guinea: Power Tariff Study Including Cogeneration/  
Autogeneration - Terms of Reference

1. You will arrive in Port Moresby on or about September \_\_, 1983, for a stay of approximately five weeks to review the existing power tariff structure, policies and regulations with particular reference to cogeneration/autogeneration. Your work would cover the following:

- (i) Review the Electricity Commission's (ELCOM) expected cost structure for 1984/85 (seasonal and time-of-day) for each grid. This would involve a rough estimation of: (a) periods at which different marginal costs apply in each system; and (b) incremental costs of generation, transmission and distribution. A detailed analysis of historical costs is available in a report compiled by a tariff consultant hired in 1980.
- (ii) Identify power demand. You should examine ELCOM sales to about 20 major customers and visit about five of them. An energy audit/combustion engineer of the Department of Minerals and Energy (DME) would assist.
- (iii) Recommend the optimum tariff structure for the 1984/85 budget. The focus should be on structure of tariffs rather than revenue requirements. A maximum of two or three very simple tariffs in each of the five regions (i.e. four grids plus isolated diesels) should be considered.
- (iv) Recommend tariff options which could be introduced for major customers in each grid assuming that the uniform national tariff would otherwise be retained (i.e. a "second best" strategy). Major customers could be offered optional tariffs as a voluntary alternative to remaining on the uniform national tariff. The object is to alleviate worst effects of the latter.
- (v) For (iii) and (iv) above, estimate financial impact on ELCOM of proposed tariffs and assist ELCOM personnel to frame tariff proposals for the 1984/85 budget.

- (vi) Recommend Government/ELCOM policy on private sector cogeneration/autogeneration/standby generation and suitable regulations and charges to implement that policy. In recommending these policies and tariffs, you will need to consider factors such as: (a) alternative fuels in use; (ii) cost and output patterns of various cogeneration/autogeneration possibilities and how ELCOM's load meshes with these; and (c) how recommended policies and tariffs assist in moving towards the country's least-cost power program.
- (vii) An important output of the exercise is a set of recommendations for ELCOM's draft budget proposal for 1984/85 which would be under preparation in late October 1983. It is, therefore, envisaged that your work (total of seven weeks including five weeks in the field) would start late September and be scheduled as follows: two weeks of site visits; one week of analysis of optional tariffs for major consumers; two weeks of assistance to ELCOM staff; and the final two weeks spent in report preparation. You would advise ELCOM on budget recommendations during the two weeks of assistance to ELCOM in late October/early November.

2. During your stay at Papua New Guinea, you should present your draft findings to the Department of Minerals and Energy, and the Electricity Commission. At the end of your stay, you will visit the Bank's headquarters at Washington, D.C. for a period of two weeks to finalize your report in consultation with Bank staff.



## OFFICE MEMORANDUM

TO: Distribution

DATE: August 31, 1983

FROM: Julian Bharier, Chief, EGYEA *JB*SUBJECT: Energy Sector Management Program: Quarterly Status Report

1. Attached please find for your information and review the second quarterly status report for the Energy Sector Management Program. The report has been subdivided into three parts:

- (i) list of completed activities
- (ii) list and status of ongoing and planned activities
- (iii) brief description of each activity.

As the relevant information becomes available, part (i) will be expanded to include the status of follow-up/implementation for the completed activities.

2. As is clear from the listing in part (ii), there is a heavy emphasis in our current work program on the preparation of Energy Assessment Status Reports in countries where Assessments were completed over a year ago. These status reports will serve to identify an updated set of priorities for technical assistance and therefore provide a framework for subsequent Energy Sector Management Program activities in these countries. Other donor agencies have also expressed a keen interest in the assessment status reports.

3. Please send any comments on the attached report to Masood Ahmed (x74545) or to myself.

MAhmed:cra

Distribution:

Messrs. Rovani, Rao, Sheehan, Sadove, Bourcier, Fish, Dosik, Heron,  
Saunders, McCarthy, Iskander, Kalim  
EGYEA staff

Part I

Energy Sector Management Program

List of Completed Activities

Bangladesh:	Priority Investment Program for Energy	May 1983
Sudan:	Management Assistance to the Ministry of Energy and Mining	May 1983
Panama:	Power System Loss Reduction Study	June 1983
Zimbabwe:	Power System Loss Reduction Study	June 1983
Papua New Guinea:	Energy Assessment Status Report	July 1983
Sri Lanka:	Power System Loss Reduction Study	July 1983

September 1, 1983



Part II: Ongoing and  
Planned Activities

ENERGY SECTOR MANAGEMENT PROGRAM  
STATUS REPORT AS OF SEPTEMBER 1, 1983 AND WORK PROGRAM TO DECEMBER 1983

Country/Activity	Principal Staff	Stage Completed	Sept.	Oct.	Nov.	Dec.	Comments
Burundi: Petroleum Supply Management	Odoulouw/King	(6)	7	8			
Burundi: Negotiations with Oil Companies	Postvedt	(6)		7	8		Part of programmed assistance may not be required because of UN offer for similar work.
Burundi: Energy Assessment Status Report	King	(6)	7	8			
Kenya: Energy Assessment Status Report	Newcombe	(7)		8			Awaiting Government clearance of draft report.
Kenya: Solar Water Heating	Newcombe	(2)					Because of ongoing CIDA project only limited advisory support from ESMP will now be required.
Kenya: Coal Import Study	Haug/Newcombe	(3)		4	5		Further progress contingent on timing of proposed CIDA contributions.
Kenya: Power Sector Efficiency Audit	Moore	(6)		7	8		
Malawi: Tobacco Industrial Efficiency Program	Wagner	(7)	8				Study has identified \$350,000 pilot energy efficiency project to be financed under Bank TA credit.
Malawi: Institutional Review of Energy Planning	Ansari	(6)	7		8		
Malawi: Energy Assessment Status Report	Ansari	(6)	7	8			
Mauritius: Energy Assessment Status Report	Ahmed	(5)	6	7	8		To be done in conjunction with TA project supervision mission.
Rwanda: Energy Assessment Status Report	King	(6)	7	8			Expected to identify priority areas for ESMP assistance.
Sudan: Power Sector Efficiency Audit	Moore	(6)		7	8		
Uganda: Petroleum Import Arrangements	King/Ogmen	(7)		8			
Zambia: Energy Sector Management	Ahmed	(2)					Government and UNDP Resident Representative preparing draft TA requirements.
Zimbabwe: Energy Assessment Status Report	Armar	(5)	6	7	8		Timing being discussed with Government.
Capco: Institutional Review (Recon.)	Gebhart	(6)	7	8			Main review will require additional funding; possible CIDA contribution being considered.
Indonesia: Energy Assessment Status Report	Prasad	(1)					Timing and scope of RSI involvement being discussed.
Papua New Guinea: Institutional Review of Energy Sector	Prasad/Alahdad	(3)	4,5	6	7	8	
Papua New Guinea: Electricity Tariffs and Regulation for Auto Generation	Alahdad	(3)	4,5	6	7	8	
Sri Lanka: Energy Assessment Status Report	Ansari	(5)			6	7	
Bangladesh: Energy Assessment Status Report	Ansari	(5)			6	7	
Haiti: Energy Assessment Status Report	King	(5)			6	7	

Stages of ESMP Activities

- |   |                                       |
|---|---------------------------------------|
| 1. Identification, definition of assistance | 5. Consultant hired, staff identified |
| 2. Government request received              | 6. Mission in field                   |
| 3. Terms of reference drafted               | 7. Draft report issued                |
| 4. Activity Initiation Report issued        | 8. Completion Report issued           |

August 29, 1983

MAhmed:cra

Part III: Description  
of Completed and Ongoing  
Activities

Energy Sector Management Program  
Status Report as of September 1, 1983  
and Proposed Work Program to December 1983

I. East Africa

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. Internal distribution and marketing arrangements will also be evaluated by this study which is being carried out by a mission (Rocheron and King) which is in Burundi now.

Negotiations with Private Oil Companies The objective of this task is to provide technical advice to the Government to help prepare it for negotiations with a private oil company on exploration activity in Burundi. Terms of Reference for consultants in the areas of petroleum exploration, negotiations and cross border unitization have been prepared. One consultant mission has been completed and the timing of the others is being discussed with the Government. However, because of a UN offer for similar assistance, part of the proposed ESMP assistance may no longer be required.

Energy Assessment Status Report A staff mission (King) is in Burundi to evaluate developments in the energy sector since the June 1983 issuing of the Energy Assessment Report, and to identify the need for further technical assistance in implementing the Assessment recommendations. This mission overlaps with the visit of the consultant advising on petroleum supply management.

KENYA

Energy Assessment Status Report An Energy Assessment Status Report, based on a recent staff mission (Newcombe) has just been sent to the Government for final clearances. The report has identified a number of areas where further technical assistance is necessary.

Solar Water Heating A CIDA supported project will help to establish solar water heating as a major alternative to electric/oil fired heaters in the residential/commercial sectors. The project builds upon one of the recommendations of the assessment report and is well conceived, structured and managed. However the Government has asked for ESMP assistance to provide technical and policy advice on this question on an ad hoc basis. The total input is unlikely to exceed two weeks per year.



Coal Import Study This study will assist the Government in formulating an overall strategy and action plan for increasing the use of imported coal in the industrial (and potentially) power sectors. The study will evaluate the potential market for coal, the infrastructure and handling required to meet this market and the alternative mechanisms for importing, distributing and financing coal supplies. The study is expected to cost \$450,000 and will only be undertaken if additional funding for this task is made available to the ESMP. Discussions on a potential contribution are underway with CIDA.

Power Sector Efficiency Audit The objective of this audit is to define short and medium term measures to implement cost effective modifications to system facilities, operations and construction standards that will improve the technical efficiency of the power system and reduce non-technical losses. The audit is to be conducted by a two-man team (Messrs. Banks and Collette) which will visit Kenya in early September. The audit will cover both generation and transmission/distribution and should generate a well specified program of follow-up which could be picked up by bilateral/multilateral agencies.

#### MALAWI

Efficiency Improvements in the Tobacco Industry The objective of this task is to evaluate the various technical options for improving the efficiency of wood use in the tobacco industry and to define a program to begin achieving these improvements. A draft report has been prepared by a June 1983 mission (Wagner (EAL), Lambert, Stocks (consultants)) and has identified a \$350,000 pilot program to begin achieving these savings. This pilot program is to be financed through a Bank TA credit.

#### Institutional Arrangements for Energy Planning

The Government has prepared draft terms of reference and scope of responsibilities for the recently created Energy Unit in the Economic Planning Division. The objective of the recently fielded ESMP mission (Ansari) was to assist the Government in finalizing these proposals and in defining their resource and manpower requirements. This mission's report will also identify the specific technical assistance 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.

Energy Assessment Status Report The ESMP institutional review mission also obtained the information required to prepare an energy assessment status report for Malawi.

#### MAURITIUS

Energy Assessment Status Report This report, which will be prepared in conjunction with a supervision mission for the ongoing Energy Planning Technical Assistance project, is particularly relevant in the case of Mauritius because a number of initiatives are underway or proposed in the

area of improving the efficiency of bagasse utilization. The status report will evaluate these proposals and define a program of further technical assistance to resolve this and other issues in the sector.

#### RWANDA

Energy Assessment Status Report A staff mission (King) is in Rwanda to evaluate developments in the energy sector since the June 1982 issuing of the Energy Assessment Report, and to identify the needs for further technical assistance in implementing the Assessment recommendations.

#### 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. An Activity Completion Report was issued in May.

Power System Efficiency Audit The objective of this exercise is the same as described above for Kenya. The same team is carrying out the work in Sudan and is in the field now.

#### UGANDA

Petroleum Import Arrangements The Assessment Mission endorsed an 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 in January/February 1983, by a consultant expert (Ogmen). The results of his work are being summarized in an Activity Completion Report to be issued in September.

#### ZAMBIA

Energy Sector Management A staff mission (Odoulowu) visited Zambia end-May to define with the Government and UNDP the scope of a proposed technical assistance package to help the newly created National Energy Council develop a full-time secretariat, with capabilities in energy sector management and planning, and in promoting conservation. However the respective responsibilities of the National Energy Council and the Department of Energy in the Ministry of Power must be clarified by the Government before this proposal can be defined further. The UNDP Resident Representative's office is following up on this matter.



## ZIMBABWE

Power System Loss Reduction A mission (Sear et al) visited Zimbabwe in November 1982 to evaluate the potential for reducing losses in the electric power distribution network. The mission identified substantial savings that could be realized in the short and medium term. An Activity Completion report was circulated in June 1983.

Energy Assessment Status Report A mission (Armar) is scheduled to visit Zimbabwe in September to obtain the information required to prepare this report whose objectives and scope would be as described for Burundi above.

CAPCO: Institutional Review The Governments of Zambia and Zimbabwe have asked the Bank to assist in the work of a bilateral commission which has been set up to review the future role and functions of the Central African Power Company (CAPCO). An ESMP financed reconnaissance mission (Damry) has just visited both countries to define the precise scope and extent of any external assistance that will be required for the commission's work. An Activity Completion Report is to be issued in September and will be used as a basis for seeking bilateral funding for the subsequent technical assistance requirements.

## II. East Asia and Pacific

### INDONESIA

Energy Assessment Status Report Given the ongoing involvement of RSI staff in monitoring energy sector developments in Indonesia, discussions are underway with the Region to determine whether a preliminary draft of this report could be prepared directly by RSI. ESMP staff could assist in this effort either at headquarters or through fieldwork, as appropriate.

### PAPUA NEW GUINEA

Energy Assessment Status Report A mission (Ahmed, Prasad) visited Papua New Guinea in early June 1983 to prepare this report which was cleared by the Government in the field and subsequently issued in final form in July 1983.

Institutional Review of the Energy Sector The June 1983 assessment status report mission identified this task as one of high priority. The Government has requested that such a review be carried out under the ESMP and a mission (Prasad, Alahdad and Dumestre) is planned for October/November 1983 to conduct this review.

Electricity Tariffs and Regulations for Auto Generation A number of electricity auto generation and cogeneration opportunities have been identified but are not being exploited because of the inappropriate tariffs/regulations governing this activity. A consultant mission scheduled for September/October 1983 will assist the Government/Elcom in reviewing and modifying these regulations.

### III. South Asia

#### BANGLADESH

Priority Investment Program for Energy On the basis of several visits to Bangladesh, a consultant (Ansari) has identified high priority energy investments, particularly in the power and natural gas subsectors. An Activity Completion Report for this task was issued in May 1983.

#### Energy Assessment Status Report

The Energy Assessment Report for Bangladesh was issued in October 1982. Since then there have been a number of developments in the sector, including the preparation of a renewable energy sub-project by the Bank. Other donor agencies have also acted on recommendations made in the Assessment. The planned status report mission in November will review these activities and identify any further areas where technical assistance is required.

#### SRI LANKA

Power System Loss Reduction A mission (Sear et al) visited Sri Lanka in March - April 1983 to evaluate the potential for reducing power distribution losses. Significant potential savings have been identified both in distribution and through improving the efficiency of generating plant. An Activity Completion Report was issued in July.

Energy Assessment Status Report The Sri Lanka Energy Assessment Report having been issued in May 1982, a mission (Ahmed, Ansari) will visit Sri Lanka in November 1983 to prepare an Energy Assessment Status Report as described above for Bangladesh.

### IV. Latin America and the Caribbean

#### PANAMA

Power System Loss Reduction In their mission of January 1983, Sear et al identified possible reductions of power distribution losses. However, given the current implementation of a second Bank power distribution loan, the potential for further savings is more restricted than in many other countries. An Activity Completion Report was circulated in June 1983.

#### HAITI

Energy Assessment Status Report The mission to carry out this exercise is tentatively scheduled for November 1983. The UNDP Resident Representative's office may contribute to the preparation of the first draft of this report.

MAhmed  
August 31, 1983



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PAGE 1 OF 2

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MR. THOMAS, UNDEVPRO, PORT AU PRINCE. RE YOUR TELEX OF SEPTEMBER 1 TO MR. HARLAND REGARDING THE POSSIBILITY OF CARRYING OUT A POWER LOSS REDUCTION STUDY IN HAITI. AS MR. MASHLER HAS ALREADY INFORMED YOU, THE INITIAL UNDP POWER LOSS REDUCTION PROJECT HAS BEEN COMPLETED AND FURTHER ACTIVITIES IN THIS AREA ARE NOW BEING CARRIED OUT UNDER THE JOINT UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM (ESMP). AS YOU PROBABLY KNOW, THIS PROGRAM PROVIDES ASSISTANCE TO COUNTRIES IN IMPLEMENTING THE MAJOR RECOMMENDATIONS OF THE ENERGY ASSESSMENT REPORTS. AS SUCH HAITI IS ELIGIBLE FOR ASSISTANCE UNDER THE ESMP, INCLUDING ASSISTANCE IN IMPROVING THE EFFICIENCY OF THE POWER SECTOR.

HOWEVER BEFORE PROCEEDING WITH ANY SPECIFIC TECHNICAL ASSISTANCE ACTIVITY UNDER THE PROGRAM AND BECAUSE THE ASSESSMENT REPORT FOR HAITI WAS PREPARED OVER A YEAR AGO, WE WOULD PROPOSE A SHORT MISSION TO

(I) REVIEW SECTOR DEVELOPMENTS SINCE THE PREPARATION OF THE ASSESSMENT (II) IDENTIFY PRIORITY AREAS WHERE FURTHER TECHNICAL ASSISTANCE IS REQUIRED AND (III) AGREE WITH THE GOVERNMENT ON WHICH OF THESE AREAS COULD BE FINANCED THROUGH THE ESMP. THE REPORT OF THIS MISSION WOULD HELP THE GOVERNMENT, OTHER AGENCIES AND OUR

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TO: INTBAFRAD, NAIROBI. FOR BAIG. RE ENERGY

SECTOR FOLLOW UP. WOULD LIKE TO VISIT NAIROBI SEPTEMBER 12 -  
15 ON MY WAY BACK FROM BOTSWANA TO CARRY OUT FOLLOWING TASKS.  
(ONE) REVIEW WORK OF POWER EFFICIENCY AUDIT TEAM WHICH WILL BE IN  
THE FIELD (TWO) DISCUSS WITH MESSRS. MASAKHELIA, LIGALE AND  
NJOIKE THE DRAFT ENERGY ASSESSMENT STATUS REPORT SENT TO  
GOVERNMENT IN JULY SO THAT IT CAN BE ISSUED IN FINAL INCORPORATING  
ANY COMMENTS THEY OR YOU MIGHT HAVE (THREE) DISCUSS WITH MINISTRY  
OF ENERGY OFFICIALS DRAFT TERMS OF REFERENCE FOR COAL IMPORT STUDY  
AND PERIURBAN FUELWOOD PLANTATIONS STUDY WHICH GOVERNMENT HAS  
REQUESTED BE FINANCED THROUGH ESMP AND FOR WHICH WE ARE SEEKING  
FUNDS FROM CANADIAN AND OTHER BILATERAL DONOR AGENCIES. WE NOW  
NEED TO DISCUSS THE CONTENT OF THESE STUDIES AND POSSIBLE  
IMPLEMENTATION ARRANGEMENTS WITH THE GOVERNMENT BEFORE DETAILED  
DISCUSSIONS WITH POTENTIAL DONORS. WOULD BE GRATEFUL IF YOU  
COULD ASCERTAIN WHETHER PROPOSED MISSION WOULD BE CONVENIENT. A  
RESPONSE THIS WEEK WOULD BE MUCH APPRECIATED TO ENABLE ME TO  
FIRM UP TRAVEL PLANS. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT,  
WORLD BANK.

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CLASS OF SERVICE: 9TELEX

TELEX NO.: 963-22022

DATE: 8/31/83

SUBJECT: KENYA:ENERGY SECTOR FOLLOW UP

DRAFTED BY: MAHmed:cra

CLEARANCES AND COPY DISTRIBUTION:

Cleared with & cc: Mr.Anderson (EAL)  
cc: Mr. Shaukat (EAP)

AUTHORIZED BY (Name and Signature):  
Julian Bharier, Chief

DEPARTMENT:  
ENERGY

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## OFFICE MEMORANDUM

TO: Messrs. Rovani, Rao, Bharier (EGY)      DATE: August 31, 1983

FROM: Masood Ahmed, EGYEA (W)

SUBJECT: ESMP Work Program and Budget

The attached table provides direct cost estimates for each ongoing and planned activity under the ESMP. It should be read in conjunction with the second quarterly status report that is also being circulated today.



ENERGY SECTOR MANAGEMENT PROGRAM  
CY83 WORK PROGRAM AND DOLLAR BUDGET a/

Country/Activity	Staff Responsible	Consultants Travel & Fees	Staff Travel	Total
Burundi: Petroleum Supply Management	Odoulowu/King	30,000	-	30,000
Burundi: Negotiations with Oil Companies	Fostvedt	50,000	-	50,000
Burundi: Energy Assessment Status Report	King		7,000	7,000
Kenya: Energy Assessment Status Report	Newcombe	-	-	-
Kenya: Solar Water Heating	Newcombe	-	5,000	5,000
Kenya: Coal Import Study	Haug/Newcombe	-	-	(400,000) <u>b/</u>
Kenya: Power Sector Efficiency Audit	Moore	50,000	-	50,000
Malawi: Tobacco Industrial Efficiency Program	Wagner	35,000	2,000	37,000
Malawi: Institutional Review of Energy Planning	Ansari	-	5,000	5,000
Malawi: Energy Assessment Status Report	Ansari	-	5,000	5,000
Mauritius: Energy Assessment Status Report	Ahmed		5,000	5,000
Rwanda: Energy Assessment Status Report	King		5,000	5,000
Sudan: Power Sector Efficiency Audit	Moore	50,000	5,000	55,000
Uganda: Petroleum Import Arrangements	King/Ogmen	-	2,000	2,000
Zambia: Energy Sector Management	Ahmed	-	10,000	10,000
Zambia: Energy Assessment Status Report	Armar	-	5,000	5,000
Capco: Institutional Review (Recon.)	Gebhart	15,000	-	15,000
Indonesia: Energy Assessment Status Report	Prasad	15,000	-	15,000
Papua New Guinea: Institutional Review of Energy Sector	Prasad/Alahdad	35,000	7,000	42,000
Papua New Guinea: Electricity Tariffs and Regulation for Auto Generation	Alahdad	30,000	-	30,000
Sri Lanka: Energy Assessment Status Report	Ansari	-	10,000	10,000
Bangladesh: Energy Assessment Status Report	Ansari	-	5,000	5,000
Haiti: Energy Assessment Status Report	King	-	5,000	5,000
<b>TOTALS</b>		<b>310,000</b>	<b>83,000</b>	<b>393,000</b>

a/ Excludes staff costs and Bank staff travel costs charged to UNDP overhead.


b/ Contingent upon CIDA contribution and not included in total.

August 30, 1983

MAhmed:cra

## OFFICE MEMORANDUM

TO: Mr. Yves Rovani, Director DATE: August 31, 1983

FROM: Masood Ahmed, EGYEA 

SUBJECT: Renewable Energy Project Ideas Identified by Energy Assessment Reports

1. Further to our discussion, I am attaching a list of possible renewable energy project ideas that were identified in various assessment reports. This list was prepared by Ken Newcombe in January 1983 and there will have been some additions in the past eight months but the basic findings are not likely to change.

2. Of the different types of projects listed in the report, I would focus on the following areas for developing Bank-financable projects:

- (i) Bagasse efficiency improvements--Mauritius is most advanced but other possible countries include Haiti and Senegal.
- (ii) Wood Efficiency Improvements in the Industrial sector--the Malawi Tobacco Curing Study is most advanced but the potential for repeating this work and developing retrofitting projects exists in other countries such as Sri Lanka, Haiti and Kenya.
- (iii) Solar water heating for commercial, residential sectors; potential for this has been identified in a number of countries where electricity is oil based at the margin. Could be linked into an IDF type operation. Countries include: Sri Lanka, Senegal, Gambia, Kenya, Haiti, Mauritius.
- (iv) Use of heat gasifiers in agro-industries--these are operating quite successfully in the Pacific, but do not seem to have reached many other countries where they would be equally applicable. We could play a major role in extending their use in countries such as Sri Lanka (copra, tea) Haiti, Malawi (tea), Kenya (tea, coffee), etc.

3. When Willem Floor arrives next week, he will update the attached list and begin to work on defining specific projects in the more "marketable" technologies.

4. Regarding Nepal, Dick Dosik is sending Mr. Tsantis a project brief based on Ernie Terrado's memo.

cc: Messrs. Rao, Bharier, Dosik

MAhmed:cra



## OFFICE MEMORANDUM

TO: EGYEA Staff

DATE: 1/28/83

FROM: Julian Bharier *JB*SUBJECT: Compilation of Proposed Activities in New and Renewables From Completed Energy Assessments

Herewith is a first attempt to draw together under various energy supply and demand categories the proposals for further work arising from Energy Assessment. Some form of this presentation can be updated to include upcoming blue or even green cover reports. The priorities listed have been assigned without wide circulation and can easily be modified. Any comments on the format and content should be directed to Mr. Newcombe. The document may be passed to Bank staff outside of EGYEA.

cc: Messrs. Rao, Dosik (EGY)

KN:cra

FINAL ENERGY ASSESSMENT REPORT RECOMMENDATIONS ON NEW AND  
RENEWABLE ENERGY SOURCE AND TECHNOLOGY DEVELOPMENT AND  
IMPLEMENTATION; BY ENERGY SOURCE AND TECHNOLOGY

COUNTRY	PROPOSED ACTIVITY	PRIORITY
<b>A. Fuelwood Supply</b>		
1. Haiti	- 100-300,000 ha short-rotation plantations near urban centers	1
	- Reforestation of water catchment areas for preserving soil and hydropower potential.	1
	- 10,000 ha near Port of Prince for supply of charcoal feedstock.	2
	- 100,000 ha of multi-purpose plantations in rural areas.	1
	- 800 ha of trial plots for fast growing species.	2
	- Survey of land resources and development of use strategy defining fuelwood plantation zones.	1
2. Kenya	- Support development of large scale plantations for urban/industrial use.	1
	- As above in semi-arid/arid regions/or acid fuel and timber.	1
	- Woodlot and agroforestry for multipurpose rural afforestation.	
3. Malawi	- Supported major modifications to improve efficiency of fuelwood use in tobacco drying kilns.	1
	- Recommended changes to fuelwood seedling production.	2
	- Fuelwood pricing issue raised.	2
4. Rwanda	- Forest resource inventory required to rationalize exploitation/development	1
	- Survey of fuelwood and charcoal users required by regional for project evaluation.	2
	- Review feasibility of papyrus exploitation.	3
5. Indonesia	- Expansion of extension network of 'regreening' workers for woodlot planting	3
	- Increase effort to understand role of home gardens as source of cooking fuel	3
6. Bangladesh	- 14,000 ha of new pulp/fuelwood plantation (USF)	1
	- 210,200 ha of new plantations.	1
	- 3,500 miles of strip plantations (total 6,000 ha) plus 200 nurseries.	1
7. Sri Lanka	- Emphasized great need for increased efficiency in wood use in industry/homes.	1
	- Supported reforestation plans.	3
8. Zimbabwe	- Need heavy reforestation urgently	1
	- Prevent current depletion of forest in commercial lands by rural afforestation/commercial woodland development.	2
	- Develop commercial plantations near to Harare.	1
	- Integrate agricultural, resettlement and fuelwood development.	2
	- Research into fuelwood and forest regeneration in Savannah lands.	3
9. Burundi	- Need 100,000 ha of fuelwood plantations.	1



<b>B. Domestic Firewood Demand</b>		
1. Rwanda	- Identify and distribute IWS adapted to local conditions.	2
2. Kenya	- Design, production and distribution of IWS. - Improved data base on household energy consumption is a high priority	1 2
3. Haiti	- Survey type of stoves and cooking in use - Establish IWS project quickly. Buy an IWS for all families (\$4 million). - Field test solar cookers.	2 1 3
4. Sri Lanka	- IWS program promoted.	3
5. Bangladesh	- IWS attributed very high priority. - Improved Chula design for 5,000 households in 500 villages, extended to 1,500 villages.	1
6. Zimbabwe	- Use of IWS is promoted.	2
<b>C. Industrial Fuelwood Demand</b>		
1. Rwanda	- Improve efficiency of woodfuel use in tea factories and other small industries/consumers (brick, pottery, wrought-iron, tobacco, hospitals, army).	1
2. Haiti	- Survey small artisanal woodfuel users to establish efficiency of fuelwood use and project for improvements.	2
3. Sri Lanka	- Improve efficiency of woodfuel use in tea and other primary industries.	3
4. Malawi	- Improve efficiency of fuelwood use in tobacco, tea and brick industry.	1
5. Kenya	- Eliminate demand for fuelwood in sugar industry by improving efficiency of bagasse utilization.	1
6. Zimbabwe	- Improve efficiency of fuelwood use in tea and tobacco industries.	2
<b>D. Charcoal Supply</b>		
1. Rwanda	- Develop/introduce new efficient charcoal kiln design, linked with licencing and pricing arrangements in industry.	1
2. Bangladesh	- Charcoal production in Kassalong Forest area. 10,000 te p.a. charcoal projected. - Charcoal production feasibility study in Sunderbans using barge mounted kilns.	1 3
3. Sri Lanka	- Charcoal company already established (Char Lanka). Projected production is 30,000 te p.a. supported.	3
4. Haiti	- More efficient means of carbonisation and primary wood energy conversion needed. (Basic traditional method needs detailed monitoring to establish efficiency and environmental costs.)	1

5. Kenya	- Identify, trial, and promote improved charcoal kilns.	1
	- Comprehensive study of existing and alternative charcoal production methods urged including charcoal transportation systems.	2
6. Burundi	- Identify, trial and promote new efficient charcoal kiln design.	1
7. Zimbabwe	- Production of charcoal from 750,000 m <sup>3</sup> p.a. of wood residues discarded in commercial forests.	2
8. Indonesia	- Study feasibility of production and transportation of charcoal from logging residues on outer islands to main demand centers, and for small rural industries.	2
<b>E. Domestic Charcoal Demand</b>		
1. Burundi	- Develop/identify, demonstrate and distribute efficient charcoal stove.	1
2. Sri Lanka	- Support for charcoal stove project urged.	3
3. Haiti	- Improve efficiency of charcoal stoves.	1
4. Rwanda	- Develop/identify, demonstrate and distribute efficient charcoal stoves.	1
5. Kenya	- Develop/identify, demonstrate and distribute efficient charcoal stoves.	1
6. Zimbabwe	- Develop/identify, demonstrate and distribute efficient charcoal stoves.	2
<b>F. Industrial Charcoal Demand</b>		
1. Sri Lanka	- Tea drying to switch to charcoal (government plan).	3
2. Indonesia	- Feasibility of small rural industries using charcoal to be examined.	3
<b>G. Agricultural Residues: Bagasse</b>		
1. Bangladesh	- Improve efficiency of bagasse utilization for power and surplus fuel production.	1
2. Kenya	- Improve efficiency of bagasse utilization to create excess for power and solid fuel production.	1
3. Malawi	- Study the cost of power produced from potentially surplus bagasse compared with alternative sources.	2



7. Haiti	- Solar hot-water for households and industry promoted. - Solar cookers.	1 3
8. Mauritius	- Solar hot water for domestic and industrial use.	1
<b>J. Hydropower</b>		
1. Haiti	- Development of the Artibonite and Guayamoue. - Reduce major losses of hydropower.	1 1
2. Indonesia	- Development of small hydro resources on outer islands.	3
3. Malawi	- Resource inventory of small hydro with preliminary design and costing. - Better evaluation of major hydro resource also warranted.	2 2
4. Kenya	- Detailed pre-feasibility and full feasibility studies required for Turkwel project (120 MW).	1
5. Rwanda	- Use of hydro electricity in boilers proposed.	2
6. Bangladesh	- Resource inventory, preliminary design and costing of small hydro potential proposed.	2
7. Sri Lanka	- Reactivation of micro hydro sites given a high priority.	3
8. Papua New Guinea	- Investments in stream gauging equipment for small achiever's and further detailed studies selected large hydro schemes promoted.	2
<b>K. Biogas</b>		
1. Bangladesh	- Community size biogas (CSB) digestors to be evaluated.	3
2. Zimbabwe	- Continued research on small biogas recommended.	3
3. Kenya	- Small biogas systems regarded as having promise and further work promoted.	3
4. Haiti	- Large scale bioconversion of slaughterhouse wastes and other concentrated organic wastes promoted.	2
5. Burundi	- Limited local R & D promoted on small scale systems.	3

L. Geothermal

1. Indonesia - Thorough resource evaluation warranted following on early developments and forestries. 2
2. Rwanda - Preliminary resource evaluation promoted. 2

M. Power Gasification

1. Papua New Guinea - Promoted to displace diesel in outlying areas. 3
2. Indonesia - Charcoal gasifiers promoted for power generation on remote islands. 3  
- Biomass gasifiers promoted for battery changing in remote areas. 3  
- Co-generation of electricity and process heat in timber mills promoted. 3
3. Burundi - Peat fueled power gasifiers promoted for rural electrification. 3

N. Pyrolysis of Biomass

1. Indonesia - Promoted for rice hull fuel in rice mills for power and process heat. Pyrolytic gases promoted for village lighting and cooking. 2
2. Haiti - Pyrolytic conversion promoted to improve energy efficiency of biomass conversion. 3

O. Wind

1. Zimbabwe - Examine viability of wind powered pumping. 2
2. Haiti - Resource inventory required, followed, if warranted, by pilot projects; and extension work. 3

P. Wood-Fired Steam Power Generation

1. Papua New Guinea - Further study of the prospects of utilization warranted. 2
2. Indonesia - Prospect of small-scale wood steam-electric generation on outer forested islands should be examined. 2



PROJECTS AND PROGRAMS IN NEW AND RENEWABLE ENERGY PROPOSED IN COMPLETED ENERGY ASSESSMENTS:

1980-81 ANALYSIS AT A GLANCE

	Haiti	Kenya	Malawi	Rwanda	Indonesia	Bangladesh	Sri Lanka	Zimbabwe	Burundi	Papua New Guinea	Mauritius
Fuelwood Supply	X	X	X	X	X	X	X	X	X		
Fuelwood Demand: Domestic	X	X		X		X	X	X			
Fuelwood Demand: Industrial	X	X	X	X		X	X				
Charcoal Supply	X	X		X	X	X	X	X	X		
Charcoal Demand: Domestic	X	X		X			X	X	X		
Charcoal Demand: Industrial					X		X				
Agricultural Residue: Bagasse	X	X	X			X					X
Agricultural Residue:	X		X	X		X	X				
Solar Water Heating and Crop Drying	X	X	X			X	X		X		
Hydropower	X	X	X	X	X	X	X			X	X
Biogas	X	X	X			X		X			
Geothermal				X	X						
Gasification of Biomass for Power					X					X	
Pyrolysis of Biomass	X				X			X			
Wind Power and Pumping	X							X			
Wood Steam Power Generation					X		X			X	

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CLASS OF SERVICE:		TELEX NO.:		DATE:	
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			DEPARTMENT:		
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TO: MR. VIDKUNN HVEDING COPY MR. SVEN ULLRING.

MR. ULLRING WILL HAVE COMMUNICATED TO YOU OUR INTEREST IN BENEFITTING FROM YOUR LONG AND VARIED EXPERIENCE IN THE ENERGY SECTOR. IN MY VIEW YOUR CONTRIBUTION WOULD BE MOST USEFUL IN THE ENERGY ASSESSMENTS AND SECTOR MANAGEMENT PROGRAMS THAT WE ARE UNDERTAKING JOINTLY WITH UNDP. THESE PROGRAMS ARE AIMED AT ASSISTING INDIVIDUAL DEVELOPING COUNTRIES IN ANALYZING AND RESOLVING THEIR PRESSING ENERGY PROBLEMS. THE VEHICLE FOR THIS WORK IS THE ENERGY ASSESSMENT REPORT WHICH IS A CONCISE AND ACTION ORIENTED DOCUMENT PREPARED BY OUR OWN STAFF SUPPLEMENTED WITH OUTSIDE EXPERTS PARTICIPATING ON A CONSULTANCY BASIS AS REQUIRED. THIS REPORT IS FOLLOWED UP THROUGH THE PROVISION OF SPECIFIC TECHNICAL ASSISTANCE UNDER THE ENERGY SECTOR MANAGEMENT PROGRAM WHICH HELPS THE COUNTRIES IN IMPLEMENTING THE RECOMMENDATIONS MADE IN THE ASSESSMENT REPORTS. FOR YOUR FURTHER INFORMATION I AM SENDING YOU COPIES OF A BROCHURE DESCRIBING THE TWO PROGRAMS AND OF TWO ENERGY ASSESSMENT REPORTS THAT HAVE BEEN RECENTLY COMPLETED. YOUR OWN EXPERTISE WOULD BE VALUABLE AT BOTH STAGES OF THIS PROCESS. MY COLLEAGUE, MR. JULIAN BHARIER WHO IS THE CHIEF OF THE ENERGY ASSESSMENT DIVISION, WILL CONTACT YOU SHORTLY TO DISCUSS SPECIFIC ASSIGNMENTS IN WHICH YOU COULD PARTICIPATE. I LOOK FORWARD TO

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TO:

THE PLEASURE OF MEETING YOU AGAIN IN THE NEAR FUTURE. BEST  
PERSONAL REGARDS, YVES ROVANI, DIRECTOR, ENERGY DEPARTMENT.

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CLASS OF SERVICE	TELEX	TELEX NO.	BOOK OF TWO	DATE	8/29/83
SUBJECT	MR. HVEDING WORKING IN ENERGY		DRAFTED BY	MAHmed:cra	
CLEARANCE	cc: Mr. Bharier		AUTHORIZED BY	Yves Rovani, Director <i>[Signature]</i>	
			DEPARTMENT	ENERGY	



ROUTING SLIP		DATE:
		August 29, 1983
NAME		ROOM NO.
Mr. <i>Rovani</i>		
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	X	SIGNATURE
NOTE AND FILE		URGENT
REMARKS:		
FROM:	ROOM NO.:	EXTENSION:
Masood Ahmed	D-449	74545

August 22.

2/23 /  
Musawad Ahmed

mc

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Distribution:  
EGYDR

Mr. ~~Rovani~~

72075 NORCO N

72075 NORCO N

OSLO, AUG. 22ND 1983

ATT: DIRECTOR YVES ROVANIA

THANK YOU FOR VERY KIND RECEPTION AND INTERESTING TALK IN YOUR OFFICES WEDNESDAY AUGUST 17.

I HAVE FORWARDED YOUR INQUIRY TO MR. VIDKUNN HVEDING. HE IS INTERESTED AND SENDS HIS BEST REGARDS TO YOU. YOU CAN CONTACT HIM DIRECTLY AT

ADDRESS: RODKLEIVFARET 6, OSLO 3, NORWAY.

TEL: 02-14.34.84

OR VIA NORCONSULT'S TELEX 18815 OR 72075

WITH BEST REGARDS

SVEN ULLRING

PRESIDENT

NORCONSULT

72075 NORCO N

72075 NORCO N

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August 22.

423/

Musad Ahmed

mc

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no spoke

Distribution:  
EGYDR

Mr. Rovani

72075 NORCO N  
72075 NORCO N

OSLO, AUG. 22ND 1983

ATT: DIRECTOR YVES ROVANIA

THANK YOU FOR VERY KIND RECEPTION AND INTERESTING TALK IN YOUR OFFICES WEDNESDAY AUGUST 17<sup>th</sup>

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WITH BEST REGARDS

SVEN ULLRING  
PRESIDENT  
NORCONSULT

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August 22.

423 / Masoud Ahmed

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To handle  
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Distribution:  
EGYDR

Mr. ROOANI

72075 NORCO N

72075 NORCO N

OSLO, AUG. 22ND 1983

ATT: DIRECTOR YVES ROVANIA

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WITH BEST REGARDS

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WORLD BANK OUTGOING MESSAGE FORM Telegram, Cable, Telex

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TO:

BOOK OF TWO  
MR. VIDKUNN HVEDING  
ROKLEIVFARDET 6  
OSLO 3, NORWAY

MR. SVEN ULLRING  
NORCONSULT  
72075 NORCO N

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TO: MR. VIDKUNN HVEDING COPY MR. SVEN ULLRING.

MR. ULLRING WILL HAVE COMMUNICATED TO YOU OUR INTEREST IN BENEFITTING FROM YOUR LONG AND VARIED EXPERIENCE IN THE ENERGY SECTOR. IN MY VIEW YOUR CONTRIBUTION WOULD BE MOST USEFUL IN THE ENERGY ASSESSMENTS AND SECTOR MANAGEMENT PROGRAMS THAT WE ARE UNDERTAKING JOINTLY WITH UNDP. THESE PROGRAMS ARE AIMED AT ASSISTING INDIVIDUAL DEVELOPING COUNTRIES IN ANALYZING AND RESOLVING THEIR PRESSING ENERGY PROBLEMS. THE VEHICLE FOR THIS WORK IS THE ENERGY ASSESSMENT REPORT WHICH IS A CONCISE AND ACTION ORIENTED DOCUMENT PREPARED BY OUR OWN STAFF SUPPLEMENTED WITH OUTSIDE EXPERTS PARTICIPATING ON A CONSULTANCY BASIS AS REQUIRED. THIS REPORT IS FOLLOWED UP THROUGH THE PROVISION OF SPECIFIC TECHNICAL ASSISTANCE UNDER THE ENERGY SECTOR MANAGEMENT PROGRAM WHICH HELPS THE COUNTRIES IN IMPLEMENTING THE RECOMMENDATIONS MADE IN THE ASSESSMENT REPORTS. FOR YOUR FURTHER INFORMATION I AM SENDING YOU COPIES OF A BROCHURE DESCRIBING THE TWO PROGRAMS AND OF TWO ENERGY ASSESSMENT REPORTS THAT HAVE BEEN RECENTLY COMPLETED. YOUR OWN EXPERTISE WOULD BE VALUABLE AT BOTH STAGES OF THIS PROCESS. MY COLLEAGUE, MR. JULIAN BHARIER WHO IS THE CHIEF OF THE ENERGY ASSESSMENT DIVISION, WILL CONTACT YOU SHORTLY TO DISCUSS SPECIFIC ASSIGNMENTS IN WHICH YOU COULD PARTICIPATE. I LOOK FORWARD TO

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TO: THE PLEASURE OF MEETING YOU AGAIN IN THE NEAR FUTURE. BEST  
PERSONAL REGARDS, YVES ROVANI, DIRECTOR, ENERGY DEPARTMENT.

END OF TEXT

NOT TO BE REPRODUCED

CLASS OF SERVICE

TELEX

TELEX NO

BOOK OF TWO

DATE

8/29/83

SUBJECT

MR. HVEDING WORKING IN ENERGY

cc: Mr. Bharier

DESTINATION

MAHmed:cra

Yves Rovani, Director

ENERGY

*Yves Rovani*

72075 NORCO N

72075 NORCO N

*Spoke*

DISTRIBUTION

EGYDR

SECRET

OSLO, AUG. 22ND 1983

ATT: DIRECTOR YVES ROVANIA

THANK YOU FOR VERY KIND RECEPTION AND INTERESTING TALK IN YOUR OFFICES WEDNESDAY AUGUST 17.

I HAVE FORWARDED YOUR INQUIRY TO MR. VIDKUNN HVEDING. HE IS INTERESTED AND SENDS HIS BEST REGARDS TO YOU. YOU CAN CONTACT HIM DIRECTLY AT

ADDRESS: RODKLEIVFARET 6, OSLO 3, NORWAY.

TEL: 02-14.34.84

OR VIA NORCONSULT'S TELEX 18815 OR 72075

WITH BEST REGARDS

SVEN ULLRING

PRESIDENT

NORCONSULT

72075 NORCO N

72075 NORCO N

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

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TO:

BOOK OF THREE:  
 MINISTRY OF INDUSTRY AND ENERGY DEVELOPMENT  
 MR. HOVE  
 HARARE, ZIMBABWE  
 TELEX NO. 4472 ZW

MINISTRY OF FINANCE  
 MR. TAKAWIRA  
 HARARE, ZIMBABWE  
 TELEX NO. 2141 ZW

MR. AMBATCHEW  
 UNDEVPRO  
 HARARE, ZIMBABWE  
 TELEX NO. 4668 ZW

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TO:

MR. HOVE, MINISTRY OF INDUSTRY AND ENERGY,  
 COPY MR. TAKAWIRA MINISTRY OF FINANCE AND MR. AMBATOCHEW UNDP  
 ZIMBABWE. I REFER TO MR. MESSENGER'S TELEX OF AUGUST 4, PROPOSING  
 A SHORT VISIT BY MR. ARMAR (ENERGY PLANNER) FROM SEPTEMBER 12 -  
 14 TO FOLLOW UP ON THE STATUS OF ENERGY TECHNICAL ASSISTANCE  
 PROPOSALS DISCUSSED WITH YOU DURING JANUARY 1983 VISIT TO  
 FINALIZE ENERGY SECTOR ASSESSMENT REPORT. THE PURPOSE OF MR.  
 ARMAR'S VISIT WOULD BE TO EXPLORE WITH YOU WHETHER THESE TECHNICAL  
 ASSISTANCE PROPOSALS ARE STILL OF HIGH PRIORITY AND WHETHER SOME  
 OF THEM COULD BE FINANCED ON A GRANT BASIS THROUGH THE JOINT  
 UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM. PLEASE CONFIRM  
 IF PROPOSED MISSION TIMING IS CONVENIENT FOR YOU. GRATEFUL  
 RESPONSE THIS WEEK IN ORDER TO FINALIZE MISSION TRAVEL ARRANGE-  
 MENTS. REGARDS, MASOOD AHMED, ENERGY ASSESSMENTS DIVISION, ENERGY  
 DEPARTMENT, WORLD BANK.

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CLASS OF SERVICE:	TELEX	TELEX NO.:	BOOK OF THREE	DATE:	8/29/83
SUBJECT:	ZIMBABWE: ESMP	DRAFTED BY:	MAHMED:cra		
CLEARANCES AND COPY DISTRIBUTION:	cc & cleared: Mr. Ahmed, EGYEA Ms. Helmink, EALDS cc: Messrs. Bharier, Wackman (o/r) (EGY) Shaakat (EAP)	AUTHORIZED BY (Name and Signature):	Julian Bharier, Chief		
		DEPARTMENT:	ENERGY		
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# OFFICE MEMORANDUM

TO: Mr. John Radan, ADM

DATE: August 25, 1983

FROM: Masood Ahmed, Acting Chief, EGYEA




SUBJECT: Authorization for Overtime on Nigeria Energy Assessment Report

Please arrange for overtime to be used in order to print the Nigeria Energy Assessment report. All charges can be made out to Energy Department No. 352, Energy Assessments Division No. 50. Your cooperation would be most appreciated.

## OFFICE MEMORANDUM

TO: Mr. D. C. Rao, Assistant Director, EGY DATE: August 25, 1983

FROM: Masood Ahmed, Acting Chief, EGYEA 

SUBJECT: GAMBIA: Energy Assessment Mission - Back-to-Office Report

1. I joined Messrs. Armar and Chronowski in Banjul on August 17 - 19 to participate in the final meetings of the energy assessment mission and to agree with the Government the next steps in the processing of the assessment report and the definition of a program of follow-up assistance.

2. As you know, a draft energy assessment report, prepared in Washington on the basis of information contained in the Orgatec Energy Master Plan Study and in other documents, had been given to the Government for their comments in May 1983. During this mission Messrs. Armar and Chronowski checked the accuracy of the information and judgments in the draft report, updated its figures and analysis to reflect the current situation and obtained additional information on areas which were previously inadequately covered. Prior to my arrival they had met with officials of the concerned ministries (Economic Planning and Industrial Development, Finance, Forestry, etc.) parastatals (Gambia Utilities Corporation, Transport Corporation) and private companies (oil companies, major hotels and industrial plants) involved in the sector.

3. In general, the mission's work confirmed the main conclusions and recommendations made in the draft report. However, two important new conclusions emerging from the mission are, first, the need to carry out urgently an emergency overhaul and rehabilitation program for the 11 or so provincial diesel-based power generating plants; these have not been maintained properly for some years and are likely to breakdown permanently unless such a program is launched. The anticipated cost of the program is \$1.0 million which includes the necessary spare parts as well as one year of an expatriate diesel engineer to carry out the work. The Government has asked for British bilateral assistance for this work but has had no response yet.

4. The second conclusion is that a sizable (by Gambian standards) unexploited market exists for solar water heating in the commercial/industrial sector. There are currently no solar water heaters in commercial use. At least five major tourist hotels and a brewery could replace diesel oil by solar systems for low-medium temperature water heating. The principal reasons for this unexploited opportunity (which would be financially very profitable to the users as well as being economically attractive for the country) appear to be a lack of awareness about the potential benefits and/or the difficulty in obtaining reliable information on suppliers/costs given that there is no local firm representing such a supplier. Both the Government and the potential users are, however, interested in pursuing this option. What is required is some technical assistance to help prepare detailed designs for each site, prepare tender documents for the supply and installation



of the equipment, evaluate bids and supervise the installation and initial operation of the systems. The whole process could be completed in 18 months and about 8 - 10 months of technical assistance will be required on an intermittent basis during this period. The subsequent investment itself (about \$0.5 - 0.75 million) could be financed through the Gambia Development Bank, who have indicated an interest in the project.

#### Report Processing

5. During the wrap-up meeting, we discussed with the Government the changes we proposed to make to the draft report before issuing it in final (blue) cover. The Government agreed that following these changes and internal review in the Bank, the report should be processed directly to blue cover. No further clearance from the Government is therefore required to complete the processing of the report. Internally the report should be ready in draft blue cover by mid-October (Mr. Armar will only be back in Washington by mid-September). Following EGY and regional review the final blue cover could be sent to the Government by early November. This timetable will satisfy the Government's desire to circulate the report at its next donors conference planned for early 1984.

#### Follow-up Technical Assistance

6. In addition to the rehabilitation of the provincial diesel generating centers and the establishment of a solar water heating program, technical assistance is required in the near term for the following tasks:

- (i) Evaluation of petroleum product import arrangements and the development of a contingency allocation program to cope with supply interruptions. Since March 1983, products are being imported from Senegal under a temporary arrangement with the SAR refinery in Dakar. The Government would like to establish the relative costs of this and other alternatives before deciding on a more permanent arrangement. They would also like to replace the current ad hoc system for allocating petroleum products in the event of shortages by a more uniform and rational set of criteria. About 10 - 12 weeks of technical assistance is required for this task.
- (ii) A comparative analysis of the costs and benefits of alternative fuelwood production schemes; considerable data on the costs of fuelwood production through different techniques has been generated from a variety of sources but about one month of a forestry economist's time is required to put these on a consistent basis and to carry out a comparative analysis of their net financial and economic benefits given the different markets they are likely to cater to.

(111) Institutional strengthening of the Energy Planning Unit in the Ministry of Economic Planning. The Government proposes to recruit an economist to work full-time in this unit supported by the Principal Planner and other staff of the Ministry on a part-time basis as required. However, a resident expatriate economist/planner will be needed for about 18 - 24 months to help establish the unit, define its work program and relationship with other agencies, assist the Government in addressing energy policy and investment issues as they arise and to train the counterpart economist who is likely to have little energy sector experience.

7. These requirements will be defined in detail in the assessment report and the Government is hopeful that bilateral donors will agree to finance the major items. However, ESMP assistance is likely to be required to carry out the petroleum import evaluation study where the delay in obtaining suitable bilateral assistance may be unacceptable. ESMP assistance may also be needed for the comparative review of the economics of alternative fuelwood production schemes. A final decision on ESMP follow-up will be made after the blue cover report has been reviewed internally and circulated to other potential donors.

cc: Messrs. Landell-Mills (WA2); Bouhaouala, Thiam, Wilton (WAP);  
Bourcier, Fish, Dosik, Saunders, Heron, Iskander, Kalim,  
Richter, Bharier, (o/r), Wackman (o/r), Moore,  
Armar (o/r), Chronowski (EGY)  
Mmes. Larrecq, Ono (WA2)



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3 TO: DANISMAN, UNDEVPRO, PORT LOUIS, MAURITIUS.

4 MANY THANKS FOR YOUR TELEX OF 8/22/83 REGARDING TIMING OF ENERGY

5 PROJECT SUPERVISION MISSION. I WILL NOW WAIT FOR YOUR CONFIRMA-

6 TION ON PROPOSED TIMING BUT WOULD BE GRATEFUL IF YOU COULD ASK THE

7 GOVERNMENT FOR A DECISION EITHER WAY BY TUESDAY AUGUST 30 AS I

8 MUST KNOW BY THEN TO PLAN OTHER PARTS OF MY TRIP. MANY THANKS.

9 REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLD BANK.

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CLASS OF SERVICE: <b>TELEX</b>	TELEX NO.: <b>4259 UNDP IW</b>	DATE: <b>8/25/83</b>
SUBJECT: <b>Mission to Mauritius</b>	DRAFTED BY: <b>MAhmed:cra</b>	
CLEARANCES AND COPY DISTRIBUTION: <b>cc: Mr. Chadwick (EA2)</b>	AUTHORIZED BY (Name and Signature): <b>M. Ahmed, Acting Chief, EGYEA</b>	
	DEPARTMENT: <b>ENERGY</b>	
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8/25.

Dear Bernard -

Thanks for your note of August 12. I am enclosing 4 copies of the Senegal EA & also a copy of the final version of the EGY Transition paper. I hope they are useful for your Delhi trip.

From the Bank, Yves & DC will be going to the Conference along with Gabriel Sanchez-Sierra whom you may not know.

Sorry I missed you in Paris on my last trip. Hope we can get together soon.

Regards

Mason



August 12 1983

BERNARD CHADENET  
Conseil International  
6, rue Masseran - 75007 Paris  
Tél. (1) 567.28.62

Dear Husool

Thank you for the Senegal Energy Assessment report, which I received in Ngebe - I enjoyed the work and our collaboration, & hope Senegal can improve its energy balance with the Bank's assistance -

I am returning to Paris at the end of the week & will leave for Delhi on Sept 13<sup>th</sup> for the World Energy Conference - For that event I would like to have about 4 copies of the Senegal Assessment, as I believe I can be useful <sup>with them</sup>. Do you know who from the Bank will attend the Energy Conference? yourself, Yves Robani? I will be staying at the Ashoka Hotel

With best regards

Sincerely

Bernard

- A room is still awaiting you in this lovely scenery of Ngebe
- Please have the reports sent to my Paris Address

Chen

## OFFICE MEMORANDUM

TO: Distribution DATE: August 19, 1983  
FROM: Masood Ahmed, EGYEA  
SUBJECT: Malawi: Tobacco Industry Efficiency Improvement Program

1. Mr. Lambert's draft report on this subject is now ready and I am attaching a copy for your review and comments. As you know, the pilot project for energy efficiency improvements in tobacco curing that has been identified by this study is proposed for inclusion in the Malawi TA II project now under preparation.

2. I would be grateful if you would send me your comments on this report by August 26th. Mr. Lambert will then incorporate these comments in a final draft of the report. If necessary, a meeting could also be arranged during the week of August 22nd to review the report with Mr. Lambert before he finalized the report.

Distribution

Messrs. Wagner, Shaukat (EAP); Hall, King (EAI); Bharier, Gaskins, Newcombe, Terrado, Kayire (EGY)

Attachment

MA:bjm



Chen

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TO:

ATLANTIC HOTEL BANJUL, GAMBIA FOR WORLD

BANK GUEST MASOOD AHMED. BERNARD CHADENET CALLED TODAY AND ASKED  
THAT THE FOLLOWING MESSAGE BE RELAYED. HE HAS RECEIVED YOUR  
MESSAGE FROM HIS ANSWERING MACHINE ON RETURN TO PARIS. ON THE  
20TH HE WILL BE IN NORMANDY WHERE YOU WILL BE WELCOME. IT IS  
EASY TO REACH BY TAKING ONE OF THE MANY TRAINS TO THE CITY OF  
CAEN WHERE HE WOULD PICK YOU UP AT THE STATION, A TWO HOUR RIDE.  
PLEASE PHONE MR. CHADENET IN NORMANDY AT 1631788324. HOPE MISSION  
GOING ON WELL. REGARDS, CHRISTINE ABUNASSAR.

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CLASS OF SERVICE: **TELEX**

TELEX NO.: **992-2250**

DATE: **8/16/83**

SUBJECT:

DRAFTED BY:

**CAbunassar:cra**

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

**Mr. Julian Bharier**

DEPARTMENT:

**Energy**

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Chan

FORM NO. 75  
(9-78)

THE WORLD BANK

<b>ROUTING SLIP</b>		DATE: 8/16/83
NAME		ROOM NO.
Messrs. Bharier/Wackman		
Mrs. Owen (EGY) (w/attachments)		
Mr. Anderson (EAL) (w/o attachments)		
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:		
The attached has blind carbon copied to you for your information.		
FROM: Masood Ahmed	ROOM NO.: D-449	EXTENSION: 74545



**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

August 15, 1983

Mr. Martin Soutter  
Bilateral Project Coordinator  
Canadian International Development Agency  
Hull, Quebec  
Canada

Dear Mr. Soutter:

I would like to thank you and your colleagues for taking the time to meet with me during my July 15 visit to Hull. I found the various discussions we had to be extremely useful and I am particularly pleased that they identified a number of specific opportunities for collaboration between CIDA and the UNDP/World Bank in the context of the Energy Sector Management Program. We have now had a chance to follow-up on these discussions and I would like to outline the current status and proposed next steps for developing each of these activities further.

Kenya

During my meeting with Mr. Jenkins, he indicated that CIDA would be interested in financing, through the ESMP, the preparation of a coal market, handling and import study which would also generate a substudy on a program for improving the efficiency of energy use in the industrial sector. As you know, the Government of Kenya has indicated to us that it attaches a high priority to this work and would like it to be carried out under the Energy Sector Management Program. We have now prepared detailed terms of reference for this exercise and I am attaching these for your review and comments. We estimate that this work will cost about \$450-500,000 and will require nine to twelve months to complete. I look forward to receiving any comments that you might have on the proposed work as well as a confirmation of CIDA's interest in financing its execution. We would also appreciate your proposals on how the mechanics of this particular contribution should be worked out.

We had also discussed the possibility of CIDA financing for a proposed study on the technical and economic feasibility of establishing periurban fuelwood plantations to meet the growing demand for wood and charcoal in Nairobi and the other urban centers. I am pleased to attach draft terms of reference for this study as well. We estimate that the study will require about \$250-275,000 and will take about six months to complete. I would appreciate your comments on the proposed work and an indication of the extent and timing of a possible CIDA contribution towards its execution.

Finally on Kenya, I had promised to send some comments on the proposal to strengthen the energy policy and management capability in the Ministry of Energy, which had been prepared for CIDA by Mr. Efford et al. This study has now been reviewed by both the Programs and Projects staff of the Bank who are involved in Kenya and I am pleased to attach a summary of their comments for your information. I hope these comments are useful to CIDA in reviewing and finalizing this proposal. Please contact me if we can be of any further assistance in this matter.

#### Central African Power Company

You will recall that I met with Mr. Brassard to discuss the possibility of CIDA support for a review of the future role and organization of the Central African Power Company (CAPCO). This review is to be carried out by a nine member commission, set up by the Governments of Zambia and Zimbabwe with the assistance of an outside chairman nominated by the Bank and supported by some technical experts. We have used existing ESMP funds to carry out the reconnaissance phase of this exercise but additional funds of about \$200-250,000 will be required for the actual review. The precise nature of the technical assistance required for the main review will become clear once the reconnaissance mission's report is available later this month but the preliminary estimates are that the services of three experts will be needed for approximately six months each. Mr. Brassard had indicated that, in principle, CIDA would be interested in financing this activity, possibly utilizing some of the regional funds allocated for SADCC countries. To follow up on this possibility, I am attaching for your information, some background material on the Reconnaissance Phase of the CAPCO review. I would be grateful if you could indicate whether and how CIDA intends to participate in this effort. As I mentioned to Mr. Brassard, given the type of technical experts that are likely to be required for this work, I think that there is every likelihood that we should be able to find qualified Canadian consultants to execute much of this work.

#### Other Matters

Mr. Cox has briefed us on his telephone conversation with you regarding the current status of the Assessment and Management PIM and PAM documents. We were glad to learn that you expect to have a final decision on the proposed CIDA contribution to the Assessment Program by the end of September. In terms of the contribution to the ESMP, we understand that the details of alternative modalities for effecting a CIDA contribution still needs to be worked out. Please let us know if we can provide any information or help to you in this regard.

As regards the specific activities raised above, I would suggest that once you and your colleagues have had a chance to review the attached material, we should meet to discuss the specific modalities of



any CIDA involvement in their execution. As I will be away for a month from September 4, it would be useful if we could meet in the week of August 29 either in Washington or in Hull.

I look forward to hearing from you. Best regards.

Sincerely yours,

A handwritten signature in cursive script, appearing to read 'Masood Ahmed', with a long horizontal flourish extending to the right.


Masood Ahmed  
Energy Assessment Division  
Energy Department

Attachment

## OFFICE MEMORANDUM

TO: Distribution

DATE: July 20, 1983

FROM: Masood Ahmed, EGYEA SUBJECT: Energy Sector Management Program - Activity Initiation Report:  
Central African Power Corporation (CAPCO): Review of Future  
Role and Functions

1. The Governments of Zambia and Zimbabwe have requested the Bank to assist in a proposed review of the future role and functions of CAPCO, in which both countries have an interest. The review will be carried out by a nine member bilateral commission comprising four representatives from each country and an outside Chairman. The commission will also need to draw upon the services of specialized technical consultants for its work. Preliminary indications are that three technical experts will be required for 4 - 6 months each to assist in the engineering, economics and legal/institutional aspects of the proposed review. This is an important institutional issue in the energy sectors of both countries and was discussed in the respective energy assessment reports. 1/
2. The Bank has responded to this request by identifying and nominating the Chairman (Mr. P. Damry) for the joint commission and by agreeing to finance through the ESMP, a reconnaissance mission by Mr. Damry to Zambia and Zimbabwe. The estimated cost of the reconnaissance phase is \$15,000.
3. The objective of this reconnaissance phase is to define more clearly the scope of work for the proposed commission and to determine the specific technical assistance that will be required. Some of this assistance may be provided by other donor agencies, once the reconnaissance mission has developed a more detailed justification of the work and a better estimate of the required inputs.
4. The attached documents provide further information on this exercise. The reconnaissance phase will be jointly supervised by ESMP and Programs staff. Please direct any questions or comments on this matter to Mr. G. Gebhart (x72579) or to myself.

Distribution: Messrs. Wapenhans (o/r), Kraske, Wyss, Bronfman, Rigo, Ofosu-Amaah, Erkmen, Nkojo (o/r), Rovani, Rao, Sheehan, Bharier, Sadove, Bourcier, Fish, Iskander, Sanders, Heron, Wackman and Ms. Bracher

1/ Zambia - Issues and Options in the Energy Sector, January 1983  
Zimbabwe - Issues and Options in the Energy Sector, June 1982



## OFFICE MEMORANDUM

TO: Mr. Purvis Damry, Consultant

DATE: July 21, 1983

FROM: Harold <sup>For GGG</sup>Messenger, Division Chief, EALDBSUBJECT: CAPCO - Institutional Review: Reconnaissance Mission  
Terms of Reference

1. You will arrive in Lusaka, Zambia on or about August 10, 1983 for a stay of about two weeks. The purpose of your visit is to prepare for the review of CAPCO's future, which is to be carried out by a Group of Experts under your chairmanship (see attached note). Your initial meeting should be with Mr. E.S.S. Nebwe, Secretary, Higher Authority for Power, who will prepare an itinerary for your visit, brief you on the issues to be covered by the review, and introduce you to the other members of the Group of Experts. You should travel to Harare, Zimbabwe and to other places in Zambia and Zimbabwe as you deem necessary to complete your work.

2. In preparing for the full review, which should take place as soon as possible after this initial visit, you should focus on the following specific tasks:

- (a) definition of the scope of work for the review;
- (b) determination of additional technical assistance required;
- (c) formulation of an action program to carry out the review, including a timetable and specific task assignments; and
- (d) estimation of the cost of the review.

3. You will obtain agreement with the Higher Authority for Power on a program of action to carry out the review as outlined in 2. above.

4. Upon completion of your field assignment, you will prepare and submit to the Bank a brief report on your mission, including the agreed action program and your recommendations as to further Bank involvement in the review. You will visit Washington for a period of approximately one week to discuss and finalize your report and to brief Bank staff on your findings and recommendations.

Cleared with and cc: Mr. M. Ahmed

cc: Messrs. Wapenhans (o/r), Kraske, Wyss, Bronfman, Erkmen, Fish, Rigo, Ofosu-Amaah, Bharier, Sheehan, Nkojo (o/r), and Ms. Bracher

GGebhart:efs

CENTRAL AFRICAN POWER CORPORATION (CAPCO)

Group of Experts to Review Future  
Under Chairman Nominated by World Bank

1. The World Bank has agreed to a request from the Higher Authority for Power, the governing body for the Central African Power Corporation (CAPCO), to nominate the chairman of a group of experts to review the future of CAPCO in relation to the interests of Zambia and Zimbabwe.
2. CAPCO was established by the two countries in 1963 to be responsible for joint hydro-power development on the Zambesi River. Several major joint hydro-power investments were subsequently undertaken under CAPCO's auspices.
3. Because of political developments in Rhodesia after the Unilateral Declaration of Independence, Zambia undertook to develop some of its hydro resources outside the CAPCO framework. Now, both the Zambian and Zimbabwean governments wish to review the arrangements for joint development of their hydro-power resources and CAPCO's role in this context. A revival or expansion of CAPCO's coordinating function would necessarily involve resolution of several difficult issues, e.g., the sharing of past and future investment costs and power tariff policy.
4. CAPCO has been assisted since its inception by technical assistance from the World Bank, which also made two loans for the Kariba hydropower complex developed under CAPCO's authority. In addition, the Governments of Zambia and Zimbabwe have often called upon the Bank to assist in resolving legal and technical issues that have arisen in connection with CAPCO's operations. While the exact form future hydro-power development in the area will take is at present undefined, the Bank would be prepared to consider further assistance to such development, particularly in the context of regional cooperation in general and of joint Zambian-Zimbabwean development in particular.
5. The proposed review of CAPCO's future will be directed by its governing body, the Higher Authority for Power, which consists of representatives of both governments. The panel of eight experts to be chosen for carrying out the review will be drawn equally from Zambia and Zimbabwe, with the addition of an independent chairman. The latter will be appointed by the Higher Authority, which has agreed to the World Bank's nomination of Mr. Purviz Damry, an Indian national with wide experience in inter-governmental mediation who is a former Vice-President and Secretary of the World Bank.
6. The Authority has agreed to finance the appointment of the chairman while the World Bank would seek finance for technical specialists (probably two or three) who are likely to be required to assist the group of local experts.
7. To establish the scope and duration of the review, draft and discuss terms of reference and determine the specific technical help required, the proposed chairman will shortly carry out a reconnaissance to Zambia and Zimbabwe, to be financed by the ongoing UNDP/World Bank energy management program.



August 15, 1983

Comments on "Canadian Energy Technical Assistance to Kenya

Advisors and Short-term Consultancy Contracts

1. In the consultants' proposal, the emphasis of the technical assistance effort is clearly geared towards the provision of advisors and that too mainly at the policy planning level. The provision for contract studies is small in comparison: about five-man years of specific study work as opposed to about 40 man-years (including possible contract extensions) for advisory staff. In view of factors discussed below, it may be beneficial to reduce the number of advisors to about five or six with expertise and specific responsibility in a number of key priority areas and, at the same time, increase the scope and extent of short-term consultancy work in response to clearly defined needs. Energy sector studies carried out in the recent past, including the proposal under review, have identified a number of issues. The main ones are:

- (i) Institutional weaknesses in overall energy policy formulation and planning particularly with respect to organizational structure, inadequately defined interrelationships and responsibilities, shortage of professionally qualified staff and a lack of long-term management experience.
- (ii) Lack of a formalized comprehensive energy policy.
- (iii) Inadequate crude oil purchasing policies and procedures. This issue is being dealt with under the present World Bank lending program for Kenya.
- (iv) Inadequacy of analysis to enable a sound basis for electricity tariff revisions.
- (v) Lack of a coordinated policy for forestry development and a diffuse and poorly defined sharing of responsibilities between a number of government agencies involved in the development of this resource.

- (vi) Ensuring the continued use of professional expertise within East Africa Power and Lighting Co. Ltd (EAPL) in major hydro developemnt decisions such as selection of dam sites and installation of generation facilities. So far EAPL have been fully involved but there is some concern that their role would be diminished in the future with the increasing participation of the less professionally staffed river basin authorities. In fact such authorities are, in many cases, the officially nominated executing agencies for hydropower development schemes.
- (vii) Lack of an energy-related transportation policy particularly as the transport sector consumes 45% of commercial energy in Kenya.
- (viii) Lack of an effort to initiate and sustain an energy conservation program within industry and within the public sector. The public sector's energy consumption is disproportionately high in relation to the total energy consumed. A coordinated conservation program should be initiated without delay as this is one of the most cost-effective methods of "increasing" energy supplies.

Implicit among the issues outlined above are a number of specific areas where TA support to Kenya would be necessary. In addition, Kenya has initiated a number of energy development schemes which are being or will be implemented and some of which will require substantial specific TA support.

2. Some of the issues outlined above would best be resolved by relatively longer term advisory support. A review of the terms of reference of the proposed advisors in relation to energy sector priorities, suggests that the number and tenure of the advisors could be reduced with perhaps a corresponding increase in specific TA work. <sup>1/</sup> To deal with the current priority areas, the following specialist advisory positions seem appropriate: energy policy analyst, petroleum economist, power systems analyst, forestry (rather than a general "biomass") advisor and an energy conservation advisor with experience in coal conversion if Kenya plans to go ahead with converting to coal as a means of reducing dependence on oil. The possibilities of carrying out conservation work as a specific TA and including an advisor for overall energy demand analysis may need to be considered. In other areas, the best use of funds would be in financing short-term consultancy contracts for a small group of experts assigned to a specific task. Overall coordination of the advisors' work and the identification of short-term consultancy work

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<sup>1/</sup> For instance, the three year tenure of the electricity tariff specialist could conceivably be replaced by a much shorter (say, six months) TA effort specifically aimed at evolving tariff revision criteria as well as proposing a revised tariff structure.



(including terms of reference and work programs) would be handled by the energy policy analyst in his role as team leader.

3. The advisor concept, to some degree absolves the incumbent from direct responsibility thereby reducing his sense of commitment towards achieving specific goals. In view of the above, it is strongly recommended that the emphasis of the proposed CIDA TA be shifted away from the advisor concept towards the financing of specific studies in accordance with the priorities attached to issues in the energy sector.

4. Where advisors are used, it would be advantageous to clearly spell out their terms of reference as well as a detailed goal-oriented work program. As far as possible, the terms of reference should relate closely to on-going or proposed energy projects rather than be open-ended. Care would need to be taken to ensure that the advisors fulfill their specific function rather than being tied down with day-to-day trouble-shooting or bureaucratic bottlenecks within Government departments. Short-term consultancy work also needs to be precisely defined. If it is not possible to define precise requirements for the whole program at this stage, the program can be implemented on a phased basis according to identifiable priorities. In this case, the outgoing advisor/s and the team leader would assist in precisely defining the next phase in consultation with the Government and CIDA. The financing needs for short-term consultancy work which is not as yet defined, could be met from a central pool of CIDA funds administered by CIDA and the management committee.

#### Executing Agency

5. The executing agency concept needs careful review. In some ways, the arrangement outlined in the report can prove counter-productive. In order to maximize the benefit of the exercise to Kenya, it is necessary to promote, as much as practicably possible, a sense of involvement and participation among senior level policy staff in Kenya. The consultants' report mentions that, at the senior level, there is no shortage of capable individuals. It is recommended that for directing and monitoring the team's activities, the "management committee" mentioned in the report be expanded to include, in addition to CIDA's Nairobi office representative and the secretary of MOE, a few competent senior personnel from energy related Government departments and parastatals including EAPL. If it is felt that an expanded management committee may prove to be a bottleneck, the authority of the committee can be suitably defined so as to retain a high degree of autonomy and independence with the team leader who would be the defacto manager at the executing level. Moreover, as the team is composed of a small group of high calibre professionals, it should be able to manage itself. On the other extreme, there may be some merit in decentralizing the team among the various government energy departments rather than its functioning as a closely-knit group. In this case, there would be the problem of logistics support which would need to be provided by the concerned government department.

Counterpart Staff

6. One of the most significant benefits of the TA scheme proposed is the development of an integral capability within the various institutions involved. Hence, the importance of local counterpart support cannot be over-stressed. A simple commitment of a minimum of six months continuous availability of counterparts is not nearly enough. In the first place, stringent conditions governing the suitability of the counterpart in terms of qualifications and experience, need to be clearly stipulated. If government salaries are unable to attract suitable individuals, the possibilities of special employment contracts or secondment of personnel from better paid parastatals may need to be examined. To compensate for shortcomings in the qualifications of the best counterparts obtainable, a formal specialist training program of about 12 to 18 months would need to be instituted for each counterpart. To reduce the "training" load of each specialist advisor, there may be some merit in hiring a separate training advisor, if a suitable candidate can be located with broad-based experience and capabilities in the energy sector. Individual counterparts should be in their jobs at least as long as the corresponding advisors and there should be at least a reasonable surety of retaining the counterpart after the advisor has left. For this purpose it may be necessary to have at least two counterparts per advisor. In view of the anticipated scarcity of good counterparts, there is additional merit in reducing the number of advisors as recommended in para 3. The concept of phasing the program was discussed in para 4. It is suggested that two of the factors determining the phasing would be (i) availability of suitable counterparts prior to hiring an advisor and, (ii) evaluation of the capability of the counterpart in taking over the work before the outgoing advisor is released. The counterparts' TORs and outline work program would also need to be defined in advance and not left to be decided on a day-to-day basis by the concerned advisor. Of course there would need to be some flexibility to cater for changes prompted by unforeseeable alterations in priorities. If these measures are not planned and implemented, the whole scheme can be rendered ineffective and Kenya's energy planning and policy formulation capability could be relegated to a state of disarray with the departure of the advisors.



July 29, 1983

DRAFT TERMS OF REFERENCE

KENYA PERI-URBAN FUELWOOD PLANTATION INVESTMENT PROGRAM

1.0 Background Notes

1.1 Overview

In 1980 Kenya's energy consumption at the point of end-use was 67 million barrels of oil equivalent. Of this 74% was supplied by wood and agricultural residues. The proportion which fuelwood makes of primary energy supply is even higher reflecting a loss equivalent to 17% of total national energy supply in the process of converting wood to charcoal. Energy use by households comprises 58% of the total, being 90% for rural households and 10% for urban households. In effect the household sector is a key determinant of the overall pattern of energy use and the supply-demand relationships in this subsector are a primary focus of energy policy and investment analysis. In real terms the wood demand is 18.7 million metric tonnes (te), only 13 million te of which is sustainable from the existing resource base. The current annual deficit of about 6 million te, is effectively mined from the stock of standing biomass, resulting in deforestation on a significant scale.

Focus of the Problem

The fuelwood supply demand imbalance and the attendant deforestation is understandably most acute in the populous inland regions (Central, Nyanza and Western provinces). In the central highlands the capital of Nairobi has become an important demand centre attracting a supply of fuelwood and of charcoal from hundreds of kilometers into the hinter-land, causing an 'urban shadow' of deforestation to extend over regions which in recent times were heavily treed. Urban woodfuel consumption is biased much more to charcoal than is rural consumption, and this pattern is being reinforced by the remoteness of the remaining forests due to the relative economy of transporting the more energy dense charcoal.

1.2 Trends in Supply and Demand

The Beijer Institute and the Ministry of Energy, Government of Kenya (MOE), have developed various scenarios of future energy demand regarding both level and mix of primary energy supply and final consumption. Under a 'base case,' total energy demand is projected to grow at an annual rate of 4.7 percent. Wood and charcoal enduse consumption grow at an annual rate of 3.6% and 6.7% respectively. With this projection a serious imbalance between supply and demand of woodfuels emerges in the mid-1980's. By 2000 an annual shortfall of 30.6 million tonnes of wood is predicted if existing management and end-use practices remain. The transition in the rural subsistence sector to combustion of crop residues and dung as woodfuel supplies dwindle has

very serious implications for agricultural production in the medium to longer term as natural nutrient cycles are breached, soil loss intensifies and soil fertility declines.

### 1.3 Elements of a Strategic Intervention

MOE and Beijer Institute have advanced several quite feasible policy measures aimed at halting deforestation and restoring a woodfuels supply-demand balance over the next 20 or so years. These include:

- \* a major emphasis on agro-forestry
- \* peri-urban plantations
- \* industrial plantations
- \* replanted forest
- \* enhanced management of existing forest.

All forest development and management programs enhance, whether directly or indirectly, the supply of woodfuels as well as achieving numerous other benefits. Agro-forestry directly enhances wood supply while stabilizing agricultural production. About 1.5 million ha of agro-forestry are proposed, and are expected ultimately to produce 12 million tonnes of fuelwood per year. Some 200,000 ha of peri-urban plantations producing 4 million tonnes p.a. are also proposed. Replanting 400,000 ha and intensively managing a further 300,000 ha of natural forest would yield 8.6 million te and 1.2 million te p.a. respectively. There are also substantial savings of woodfuel to accrue from efficient charcoal production using modern portable metal kilns, and various woodfuel stove programs. The supply side measures targeted for 1990 and 2000 are outlined below in Table 1 followed by a regionalized picture of targeted developments in Table 2.

Table 1

#### Wood Project Policy Case National Target Implementation

	Cumulative Areas		Actual Yield 2000 (Million Tonnes/year)	Ultimate Sustainable Yields
	1990 (1000 hectares)	2000		
Agroforestry	385	871	7.1	7.1
Replanted Forest	74	281	5.0	6.0
Periurban Plant	51	165	3.7	3.5
Managed Near Forest	116	260	0.8	1.6
Managed Far Forest	180	180	0.9	1.1
Industrial Plantation	14	39	0.6	0.8
<b>TOTALS</b>	<b>820</b>	<b>1,796</b>	<b>18.1</b>	<b>20.1</b>

Source: Beijer Institute/MOE. GOK



Table 2  
Wood Resource Policy Targets

Provinces	Replanted Forest	Manage Nearby Forest	Manage Remote Forest	Peri Urban Plantation ('000 ha)	Industrial Plantation	Agro Forestry	Total Land Targeted	Total High & Medium Potential Land
Central/ Nairobi	1990 2000	19 100	34 70	5 5	25 105	6 15	38 101	396 1,388
Coast	1990 2000	6 15	6 15	5 5	1 5	-- --	29 65	105 1,421
Eastern	1990 2000	6 15	5 15	5 5	6 10	0 4	41 95	144 2,964
North-astern	1990 2000	-- --	-- --	-- --	2 5	-- --	-- 5	-- --
Nyanza	1990 2000	1 1	-- --	-- --	7 15	-- --	106 250	-- 266 1,252
Rift Valley	1990 2000	40 130	56 128	165 165	7 15	6 15	111 210	-- 663 3,458
Western	1990 2000	2 20	14 32	-- --	3 10	2 5	60 150	-- 217 823
<b>TOTALS</b>	1990 2000	74 281	116 260	180 180	51 165	14 39	385 271	1,796 11,301

Source: Beijer Institute/MOE, GOK

#### 1.4 Implementation

Various bilateral donors have responded to the challenge of mobilizing resources to enhance household energy supply in line with the aforementioned proposals. USAID, SIDA and, more recently, the Dutch and German aid programs have focussed on agro-forestry and rural woodlots, while the Bank group and others have devised support programs within the rural forestry sub-sector. Similarly there has been a series of very

promising initiatives in charcoal and wood stove improvement with donor support. The Government and the Bank have reached agreement under the Energy Sector Management Program (UNDP/World Bank) to concentrate, therefore, on pre-investment work within components of this overall strategy yet to receive significant attention. These include:

- \* peri-urban plantations, including Nairobi and Mombassa.
- \* large scale carbonization of forest logging residues using efficient charcoal kilns
- \* sustained yield management of the coastal mangrove resource

The Beijir Institute has not attempted to define priorities within this general fuelwood supply and conservation program. Whereas the need for proceeding on many fronts at once as part of an integrated program of action has appeal, there are limitations on the commitment that can be made by government of its own scarce manpower and financial resources. A key consideration, then, is the level and kind of input that can be made by government to peri-urban forestry, and the extent to which this becomes a limiting factor in program implementation.

## 2.0 Objectives

The broad objectives of this pre-investment analysis are as follows:

- \* To provide a set of adequately detailed, phased investment plans for all peri-urban woodfuel plantations to be established between 1985 and 1990 within the overall framework for woodfuel production proposed by the Beijir Institute/MOE fuelwood cycle study and within these master plans, to provide detailed prefeasibility work on the first 25,000 ha to be established on the basis of selected criteria of priority. Such plans are to be presented in a manner which will readily facilitate government decision-making and financier appraisal, and should allow donors to fund sizeable projects within an overall program of investment.
- \* To define a range of options for private sector involvement in all stages of peri-urban woodfuel production and sale with the guidance and active encouragement from the Government of Kenya, noting in particular the relative priorities for government in the allocation of its scarce resources within the woodfuels program defined, and the implications these have for government participation in this activity.
- \* To identify the full complement of social and economic policy issues and options facing program implementation, including land availability, demographic factors institutional and manpower training considerations, required incentives for production and consumption, nominating the



sequence in which these matters must be addressed and resolved by government at all levels.

### 3.0 Specific Work Program

The work program is to be completed and documented in final form by March 1, 1984. It should include at a minimum, close consideration of the elements outlined below, though tendering companies are at liberty to expand or alter the emphasis of the outlined work program.

The work program includes two prime components to be completed in phases.

- \* First, the overall investment planning, establishing in broad outline the total investment required by area up to and including 1990, to satisfy demands foreseen (by Beijer/MOE in 1995 and beyond (depending on rotation) and,
- \* Second, detailed prefeasibility conceptual design and costing (plus or minus 20%) for the first 25,000 ha to be established in order of priority within the overall investment program proposed.

### 3.1 Land

In determining the availability of land for fuelwood plantation development complex issues of ownership, accessibility, suitability and highest value usage will have to be considered. Good quality arable land and heavily populated areas are not to be considered in this land resource assessment. The 25,000 ha for initial detailed pre-feasibility study must include Nairobi and Mombassa, though priority should be established for investment to satisfy the fuelwood needs of the Central province urban areas, and urban settlements in the Nyanza Western and Rift Valley provinces. The required analysis should include:

- \* inventory of the total area of 'suitable' land within the peri-urban region (as deemed reasonable to serve the particular market), noting all the relevant physical parameters (soils, moisture, slope, etc. transport and infrastructure requirements).
- \* description of the current ownership and use of this land and the likely opportunity cost of its use for plantation development, noting all related demographic, social and political issues and options. Emphasis should be given, where relevant, to the integration of existing communities with the process of commercial fuelwood production.
- \* ranking the available land in order of desired development using criteria of productive potential, social acceptance and least cost economic development program.

It should not be necessary to undertake extensive soil testing or any major field-work for physical data collection. Existing information accompanied by sample analyses should be adequate for this phase of project preparation.

### 3.2 Plantation Design and Establishment Cost

The key factors to be considered here include species and provenance selection, spacing, fertilization, rotation length and prospects for multi-purpose forestry. Careful consideration should be given to shortening the rotations to five years or so using adequate initial land preparation and fertilization, and by manipulating other relevant design parameters. This implies, and requires, diversity in plantation design rather than one dominant establishment pattern. Due to uncertainty in predicting yield response with so many interacting variables strong emphasis must be placed on design for simple, but robust and comprehensive, monitoring to enable plantation design and maintenance to be continually optimized. This is an important consideration in determining for overall manpower development and training requirements. Thus, the required analysis should include:

- \* a range of designs sympathetic both with the above-mentioned technical considerations and with the options for small-holder based and centralized industrial production systems, defining in each case the nature and method of overall plantation management to ensure optimum economic yields and sustained production of high quality woodfuels. For example, what role should the Department of Forests play in the management of private sector plantations.
- \* full financial and economic analyses of the options proposed including internal rate of return and present value unit cost estimations for each discrete plantation development within the overall investment program.
- \* proposals for the optimum size of forest holdings in a small-holder production and management system at each site based on fair risk and financial payback to the small-holders for investment of time and materials. Include the case for charcoal production in addition to, or instead of, firewood production. Describe for each case the nature of incentives and the need for, and form of, credit for small-holder production units.

Analysis should specify solid cubic meters and oven dry tonnes of production and be sensitive to changing basic density with age of forest.

### 3.3 Product Transport and Marketing Mechanism

The range of options for marketing the products is large and must be narrowed to several realistic cases after an initial



evaluation. Marketing options depend greatly on the extent of private sector (large and small entrepreneurs) involvement. On the one hand government could establish a parastatal to undertake both production and marketing at all levels in the distribution chain, and on the other hand small-holders could be entirely responsible for marketing their products, and might choose to wholesale them in the forest, or even to retail them personally through an urban outlet. Due consideration must be given to the already extensive system of charcoal production, delivery, and sale, entirely within the private sector, and the costs and benefits of any modification or regulation by government of this pattern in the case of peri-urban plantation woodfuel production. These analysis should include:

- \* description of several practical options for production, transportation and marketing compatible with the social and economic structure of the production system, nominating the costs and benefits of each approach.
- \* considerations of quality and price control if and where desirable. For example, what is the minimum government role? Is a marketing corporation or a wholesale market facility required?
- \* specification of the total infrastructure requirements to be provided by government under each model of product transportation and marketing proposed, their locations in time along the critical path of program implementation, and the means of cost recovery to be applied.

#### 3.4 Manpower Training and Development

A major program of investment in forest production is here envisaged. The proposed plantation models and the systems of production are new to Kenya, hence substantial retraining and new manpower development will be required. Training for this component of the woodfuels program must be compatible with that for the remainder, and with that for the forestry sector as a whole. The consultants are therefore expected to identify:

- \* the manpower training and development requirements for the full 1985-1990 peri-urban plantation investment program devised including the needs for small-holder short-courses and field visitation systems where appropriate, and to reconcile these requirements with any existing proposals for training within the industrial forestry and woodfuels sectors.
- \* develop a schedule and costing of the training requirements at each level parallel with the overall investment program, being careful to note the absolute minimum requirement for the first phase of investment proposed (i.e. the first 25,000 ha)

### 3.5 Economic and Financial Analysis

The analyses applied to each component are to be aggregated into an overall program costs and benefits review, presented in both financial and economic terms. To the extent that it is possible the risks associated with each of the favored options for plantation establishment and management should be identified as an aid to decision-making by the government and by prospective program financiers. Implications for employment should be clearly and separately evaluated. The relevant economic and social costs and benefits of each approach should be succinctly and simply presented. A special issue which may arise is that of woodfuel pricing. The consultant is expected to determine the financial viability of plantation development based on present firewood and charcoal prices. It is likely that present woodfuel prices are quite low for they bear no resource cost. Accepting the verity of the Beijer/MOE supply-demand projections, by the time the plantations proposed are in production the market prices will be much higher in real-terms, and may then more soundly justify the initial investment. Special consideration may, therefore, have to be given to financing strategies to overcome this investment hurdle if, for other reasons, private sector involvement appears desirable.

### 3.6 Development Schedule and Investment Programming

A precise schedule of program implementation should be compiled summarizing the schedules for implementation for each of the program components (infrastructure, planting, training, distribution and marketing). A parallel schedule of investment requirements should be specified for each phase of for each project (e.g. discrete plantation) amounting to a statement of funding requirements year by year, distinguishing foreign exchange and local currency requirements. The presentation of this section of the study must readily facilitate separation of discrete major projects within the program for consideration by different donors or financiers.

### 3.7 Local Counterpart Agency and Local Logistical Support

- \* Details of local counterpart agency to be provided by GOK before release of the TOR for tender, along with local support facilities of office, secretarial assistance, and transportation.
- \* Details of basic materials and information will be provided by Beijer and GOK upon review of terms of reference. Some determination is required of available maps (soils, topographies), demographic data, air photography, land tenure records, forestry production data, and the relevant data collected by the Beijer/MOE study.



Addendum on Costs and Study Schedule

In order to assess the likely study costs and timing of the following outline of manpower requirements and a schedule of deployment has been drafted. Clearly, these will not accompany the "Request for Proposal" as the consultant is expected to provide his own as part of the proposal. In summary, the schedule should approximate the following:

- |   |                       |
|---|-----------------------|
| 1. Clearance with CIDA  | August 1983           |
| 2. Review and finalization of TOR by Beijer in consultation with the Bank and GOK | September 1983        |
| 3. Sending out RFP's and receiving proposals                                      | October/November 1983 |
| 4. Selection of prime contractor  | December 1983         |
| 5. Work begins  | January 1984          |
| 6. Contractor reports   | May 1984              |
| 7. Final report approved by all parties   | July, 1984            |
| 8. Donors and financiers solicited  | July-September 1984   |

Cost Estimate

	US\$
1. Review of TOR by Beijer Institute	2,000
2. Discussions with GOK prior to lending	10,000
3. Pre-feasibility study 15 man-months plus costs	<u>250,000</u>
TOTAL	262,000

Time and Cost Budget

			Weeks
<u>Advanced Preparation and Review</u>			6
<u>Land Analysis</u>	<u>Nairobi</u>	<u>Rest</u>	
Inventory of suitable land	3 weeks	4	7
Ownership delineation	2	4	6
Social factors/Opportunity costs	1	1	2
 <u>Plantation Design and Cost</u>			
(includes project economic analysis)	2	4	6
 <u>Transport and Marketing</u>			6
 <u>Manpower Training</u>			
<u>Economic Financial Analysis</u>			3
<u>Development Scheduling, Priority Determination, and Investment Programming</u>			4
<u>Coordination</u>			5
 <u>Report Writing, Editing</u>			<u>10</u>
			60

Rough Cost Estimate

	<u>US\$</u>
60 weeks X 6.5 days US\$350=136,50 or	140,000
Per diem 45 weeks X 7 days \$120 = 37,800 or	40,000
International travel 6 X \$3,000	18,000
Local travel (estimate)	25,000
	<u>223,000</u>
Contingencies (printing, review meetings, etc.)	27,000
	<u>250,000</u>



Work Programme	Executed by	Week		Field Work								Report Writing						Presentation	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Land Availability	Silviculturalist*																		
	Sociologist																		
	Economist																		
Plantation Design Establishment Cost	Silviculturalist																		
	Economist																		
Product Transport, Marketing	Team Leader																		
	Sociologist																		
Manpower Training, Development	Teamleader																		
	Sociologist																		
Economic, Financial Analysis	Teamleader																		
	Economist																		
Development Schedule	Economist																		
Report Writing	Teamleader																		
	Silviculturalist																		
	Economist																		
	Sociologist																		
Coordination	Teamleader																		
Presentation	Teamleader																		

\*cum soils specialist

DRAFT

KENYA

Coal Conversion Action Plan

Terms of Reference

The Joint UNDP/World Bank Energy Sector Management Program  
Energy Assessment Division  
The World Bank

August 1983



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## I. BACKGROUND

While hydroelectric and geothermal resources provide most of the electricity demand in Kenya, imported oil is the only source providing the rest of the commercial energy demand. In 1979, petroleum accounted for about 79% of the commercial energy demand, whereas coal met only 2% of the total commercial energy demand.

This heavy dependence on imported petroleum has generated increasing pressure on the country's foreign exchange requirements. For example, in 1981 the net import costs were 36% of export earnings in 1980. By 1982, these costs escalated to 57% of Kenya's export earnings.<sup>1</sup> Additionally, disagreements between the government and oil companies over refinery management and investments have further aggravated the adverse economic impact resulting from imports.

The Government of Kenya is considering a number of options to affect end-use efficiency in the user sectors and at the same time develop alternative supply strategies attractive to potential investors.

Within the overall energy sector strategy, the World Bank is assisting GOK in assessing the potential feasibility of a coal conversion program through the year 1995 with the objective to reduce GOK's dependence on imported oil and at the same time improve end-use efficiency in the various user sectors.

This document provides detailed terms of reference for a study to develop an action plan for a coal conversion program in Kenya. The study will provide sufficient broad policy information as well as project-specific options for this program.

Background information on energy supply and demand, existing coal infrastructure and the GOK's current policies institutional make-up is available in a report entitled "Kenya: Issues and Options in the Energy Sector" published by the World Bank in May 1982. Additional information is available in a follow-up report prepared by the World Bank in April 1983.

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<sup>1</sup>Activity Completion Report: Kenya Joint UNDP/World Bank Energy Sector Management Program, World Bank, April 1983.



## II. OBJECTIVES

### A. General Objectives

The overall goal of this study is to prepare an action plan which will enable the Government of Kenya to develop and implement a long-range coal conversion program through the year 1995. Such a program is expected to achieve a significant reduction of oil imports and thus result in substantial savings in foreign exchange. This program is to be developed within the context of an overall energy sector strategy including improvement in end-use fuel efficiency and inter-fuel substitution. The study will provide GOK a framework within which specific projects and proposals for different parts of the program can be evaluated.

Specifically, the study will result in an overall strategy as well as a dynamic action plan focused on (1) developing coal markets in the user sector, (2) assessing the infrastructure requirements and facilitating their development and (3) developing and implementing appropriate government policies to launch a large coal conversion program in Kenya.

To achieve this goal, this study will provide an analysis of strategic issues as well as technical project-specific information useful to (1) the community of coal users, (2) government policy makers, (3) the international financial community and (4) potential investors within and outside Kenya.

A major thrust of this study is to develop options which will minimize the government capital outlay and at the same time create a climate to stimulate private sector participation and investment in various components of a large coal conversion program.

### B. Specific Objectives

The specific detailed objectives of this study are as follows:

- (1) Conduct a study to assess the potential of energy conservation in the industry and power sectors. This will include potential reduction in current energy use by making economical equipment and process improvements as well as potential substitutions of current usage of oil by indigenous energy resources (e.g. coffee grounds and other agricultural residues).
- (2) Complete a study to develop estimates for coal markets in the industry and power sectors as well as new uses for coal in Kenya which will provide both the govern-

ment and private sector information needed for potential investments in coal through the year 1995. In addition, the consultant is required to conduct a sensitivity test of market estimates to alternative sets of reasonable economic assumptions (e.g. oil price).

- (3) Present an analysis of the overall infrastructure requirements to serve the future coal markets. This analysis will include (1) the port facilities, (2) ground transportation facilities and (3) mechanisms for local distribution of coal to end-users. In addition, the study is expected to present options to achieve the development of infrastructure requirements with a minimum level of government capital outlay and maximum private sector investment. These options may include policies related to pricing, subsidy, tariffs, investment tax credits and modifications to the existing institutional structure within GOK.

The following specific infrastructure requirements will be analyzed:

- o Shipment of coal to port
    - contractual mechanisms
    - role of suppliers
    - ship ownership
    - tariffs
    - government importation and procurement policies
    - costs of various options
  - o Port facilities and operations
    - role of port authority
    - physical characteristics of the facility
    - expansion potential and strategy
    - financing options
    - ownership and management structure
    - costs of various options
  - o Ground transportation facilities and operations
    - structure and management of truck and rail operations
    - requirements and potential for expanding existing routes
    - financing options
    - costs of various options
  - o End-user facility operations
    - potential of regional coal distribution centers
    - overall operations, costs and options
- (4) Develop sets of government policies to achieve the objectives of the coal conversion program with a minimum capital outlay from the Government and a



maximum level of private sector participation and investment. The policies to be analyzed shall include pricing, procurement, ownership, taxes, subsidies and institutional structure.

- (5) Define and analyze various options for physical delivery of coal from port to various end-user sites. This analysis will include comparing the economies of coal transportation by rail and truck and potential storage sites for regional coal distribution.
- (6) The consultant will develop various project options under the overall coal conversion program which could be farmed out individually for detailed feasibility studies.

### C. Final Report

The product of this study will be a report consisting of two parts. The first part of this report will contain the following information:

- o A stand-alone document on conservation and coal conversion programs, providing:
  - (1) an action plan to GOK to facilitate potential funding of specific sub-projects,
  - (2) appropriate economic and technical information to staff in international financial institutions for evaluating various projects resulting from this study,
  - (3) project-specific technical, economic and financial information to the private sector for potential investments in economically viable projects, and
  - (4) information to technical staff in the public sector in Kenya to monitor and effectively implement the program.
- o A summary of potential individual projects along with their costs and schedules and potential financing mechanisms to meet the goals of the coal conversion program. Sets of potential projects that could be evaluated and implemented in a phased approach at different points during the 10-year program to allow the government and private investors maximum flexibility in responding to individual project development without compromising the overall objectives of the program.

The second part of the report will provide project-by-project details with respect to their objectives, costs, financing options and schedule and will define the specific scope of the full scale feasibility studies needed for these projects.

### III. SCOPE OF WORK

#### A. Assess Potential Conservation Opportunities in the Industry and Power Sectors

##### 1. Plant Energy Audits and Potential for Savings

The consultant will conduct detailed plant-by-plant energy audits and identify potential areas where equipment and process efficiency improvements could be economically achieved. Based on these audits, the consultant will develop estimates of net reduction in energy consumption by fuel type.

##### 2. Potential Substitution of Oil by Indigenous Energy Sources

The consultant will also assess the potential of substitution of oil by other indigenous energy resources. For example, certain current uses of oil for specific industrial processes could be wholly or partially substituted by heat/steam from agricultural residues, coffee grounds, etc.

##### 3. Cost Estimates for Energy Savings

The consultant will provide estimates of costs of energy efficiency improvements for each of the plants and aggregate them to estimate the overall costs of a conservation program. In addition, the consultant will calculate ROI and payback for various sets of conservation projects.

4. The consultant will prepare a report and provide a conservation plan with technical and cost details of various subprojects. This information will be useful to GOK in taking specific actions targeted towards improving end-use fuel efficiency in Kenya, as well as to the private sector.

#### B. Estimate Economically Achievable Market for Coal

##### 1. Coal Market Projections

The consultant will develop estimates of coal market in Kenya through 1995. These estimates will be developed based on rational assumptions on external factors such as oil prices, projected economic and industrial growth rate in Kenya and other fiscal and monetary policies. Furthermore, the consultant will conduct a sensitivity test of these markets to changes in base assumptions regarding external factors.

##### 2. End User Coal Conversion Study

The consultant will conduct surveys of all potential coal users on a plant-by-plant basis and identify the extent to which their current oil use could be economically dis-



placed by coal. Furthermore, the consultant will identify new economic uses of coal in various industrial processes and the power sectors. The consultant will specifically estimate the potential of coal replacing part of the hydro capacity in the power sector. The consultant will then aggregate these data to develop economically achievable levels of coal markets in Kenya through 1995. This task will also include a cost/benefit analysis of coal conversion on a plant-by-plant basis (i.e. ROI and payback computations).

### 3. Options for Coal Importation

As part of this study, the consultant will develop various options for the importation of coal to the port. These options will include detailed information on the following:

- o Procurement Policies
- o Contracting mechanisms including public sector and private sector partnership
- o Organizational set-up and options for managing the coal import process including roles of various entities in Kenya
- o Policies with respect to taxation and tariff
- o Options for payments to coal suppliers including financing mechanisms.
- o Options on ship ownership

### 4. Specific Coal Procurement Options

The consultant will develop a report which will define and analyze potentially feasible options to procure coal into Kenya and will provide sufficient information to enable potential suppliers and users of coal and potential investors in the program to make appropriate decisions. The information to be developed will be in sufficient detail as to include potential sources of coal supply, criteria for development of short- and long-term coal contracts, pricing and financing and payments to coal suppliers.

## C. Analyze the Infrastructure Requirements to Serve the Coal End-users

The consultant will conduct the following specific activities as part of the assessment of overall infrastructure requirements:

### 1. Excess Capacity at Port of Mombasa

The consultant will analyze the potential for using the existing excess capacity at Port of Mombasa for coal shipments in the short term. The consultant will lay out a plan to conduct a detailed engineering and

financial feasibility study to utilize this excess capacity at the port. The plan will include (1) technical feasibility of increasing coal throughput capacity including equipment requirements, (2) assessment of capital and O&M costs, (3) financing options by source and (4) the roles of GOK, port authority, international financial institutions, commercial institutions and other parties that may have a vested interest in the program.

## 2. Port Expansion Plan

The consultant will also develop a similar plan to conduct a detailed feasibility study of expanding the Port of Mombasa to handle the full market for coal in Kenya.

It is the intent of this study to conduct a prefeasibility study of all aspects of port expansion and develop a detailed plan with sufficient information on port characteristics, technical parameters, costs and financing mechanism such that other interested parties may perform the detailed feasibility studies for potential investments.

## 3. Ground Transportation Plan

The consultant will also develop a detailed plan for ground transportation of coal to end-users. In developing this plan, the consultant will provide several attractive short- and long-term options for the utilization of existing rail and truck routes as well as the expansion required.

For each of these options, the consultant will develop cost estimates, sources of financing, financing mechanisms and the roles of GOK and others including railroad industry, truck operators, etc.

## 4. Regional Coal Distribution Centers

Furthermore, the consultants will define the prefeasibility of developing regional coal distribution centers in proximity to user centers so that each distribution center could supply coal to a group of users. Several options for these distribution centers will be identified and the consultant will develop capital and O&M cost estimates and organizational structure to operate these centers.

## 5. Plant Operations

This pertains to an analysis of coal utilization at typical industrial plant facilities. This includes storage, loading, charging, combustion regulation,



meeting air emission standards, fly ash removal and disposal, bottom ash removal and disposal. The analysis will determine the capital and operational costs entailed by coal conversion.

#### 6. Cost Benefit Analysis

The consultant will carry out a cost/benefit analysis of the various elements of the overall port and infrastructure development program and a similar cost/benefit analysis of specific projects. The consultant should propose their criteria for the economic and cost/benefit analysis.

#### D. Assess Institutional Capacity, Operations and Policy

The consultant will review the current institutions in Kenya which will have a potential role in the coal conversion program. These institutions will include (1) various agencies of the Government of Kenya, (2) the port of Mombasa, (3) the railroad agency, (4) truck operators and (5) individual plants and power companies which are potential candidates for coal conversion.

The consultant will collect and analyze detailed information on the following:

- o procurement and contractual policies, shipping contracts, tariffs, etc.
- o interface among various agencies
- o business practices
- o organizational changes necessary to participate effectively in the implementation of a large coal conversion program.

In analyzing the policies of the port operations, railroad operations and local delivery systems, the consultant will attempt to define their specific policies with respect to short- versus long-term contracts, price structures, investment criteria and the overall attitude of the executives towards capacity expansion.

Based on the assessment of the overall institutional structure, the consultant will develop a detailed plan of operation for implementation of the coal handling and conversion program. This plan of operations will include roles and responsibilities of various public and private entities, mechanism for interface and coordination, and their communication roles in implementing the program.

Furthermore, the consultant will develop sets of policy options which may provide the maximum momentum to the coal conversion program with the government incurring minimum

feasible costs. As part of this exercise, the consultant will also analyze government operation policies with respect to the overall infrastructure and develop various economic options.

A key activity under this task will be to examine various packages of public sector/private sector roles, operating procedures and policies and analyze these packages with respect to their effect on the management of the short- and long-term coal conversion program.

#### E. Develop Various Coal Supply and Conversion Options

The consultant will develop various potentially feasible options for affecting coal conversion at the user level to the year 1995. These options will be developed based on information gathered from the tasks on coal market and infrastructure requirements.

A typical option will contain a series of fundable sub-projects which could be separately farmed out for bids and financing. For example, one option may be the following:

- o Subproject 1: Modify Mombasa Port operations to utilize existing excess capacity for additional coal shipments.
- o Subproject 2: Develop infrastructure to deliver coal to 3 selected plants which are immediate candidates for economic coal conversion.
- o Subproject 3: Procure and install all equipment for environmental controls.
- o Subproject 4: Construct a storage facility for storing 3-month supply of coal for the 3 selected plants.

The consultant will develop several feasible options. For each option, the consultant will present the following information which will be self-contained and could be used by financial institutions to appraise various subprojects for potential funding:

- o Detailed Terms of Reference for the option as a whole as well as all individual subprojects.
- o Schedule, including key milestones and phasing of subprojects.
- o Capital and O&M budget requirements with annual cost over the life of option.



- o Overall financing requirements for the option and individual subprojects and a phased financing plan over time.
- o Mechanisms for procuring, importing and distributing coal to end-users.
- o Specific government policies affecting various aspects of the entire coal conversion program.

The information developed will be in sufficient detail so as to permit individual interested entities to conduct detailed feasibility studies of each option or individual subproject.

The consultant will develop an overall action plan which will contain individual options as well as the linkage of all individual options and subprojects with respect to scheduling and financing requirements.

#### F. Management and Reporting

The consultant will provide a detailed workplan with schedule, personnel assigned, labor allocation by each activity and briefings and reports. This plan will be submitted within 4 weeks after the contract begins.

In addition, the consultant will present one project briefing in Kenya and one in Washington, D.C. The consultant should propose appropriate points during the study for these briefings in their bids.

The following specific reports are required:

- o Monthly Progress Reports
- o Report on Conservation Plan
- o Interim Report on Coal Market Study
- o Interim Report on Infrastructure Requirements
- o Final Report

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**UNDEVPRO**

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**DR. CHARIF L. TUHAMI**

**MINISTRY OF ENERGY AND MINES**

**KHARTOUM, SUDAN TELEX NO. 97022256 PETRO SD**

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3 SUDAN ATTENTION MOHAMED NASR ABU BAKR, DIRECTOR GENERAL.

4 CONCERNING PLANNED POWER SYSTEM EFFICIENCY AUDIT, MISSION'S WORK

5 WOULD BE ASSISTED IF FOLLOWING MATERIAL COULD BE MADE AVAILABLE:

6 (AAA) FOR EACH THERMAL PLANT COMPLETE UNIT AND PLANT DATA; LIST

7 OF ALL MAJOR EQUIPMENT WITH MANUFACTURERS RATINGS/GUARANTEES; HEAT

8 BALANCE AND FLOW DIAGRAMS; ORIGINAL ACCEPTANCE TEST DATA SHEETS;

9 PLANT SITE PLAN, PLANT CROSS-SECTION, AND MAJOR EQUIPMENT ASSEMBLY

10 DRAWINGS; DATA ON OPERATION AND MAINTENANCE STAFFING AND COSTS;

11 CONTROL SYSTEM DATA; WATER ANALYSES AND WATER TREATMENT METHODS;

12 TYPICAL PLANT OPERATING PATTERNS. (BBB) FOR EACH HYDRO PLANT

13 COMPLETE UNIT AND PLANT DATA; LIST OF ALL MAJOR EQUIPMENT WITH

14 MANUFACTURERS RATINGS/GUARANTEES; PLANT SITE PLAN, PLANT CROSS-

15 SECTION, AND MAJOR EQUIPMENT ASSEMBLY DRAWINGS; DATA ON OPERATION

16 AND MAINTENANCE STAFFING AND COSTS; OPERATING RULE CURVES; TYPICAL

17 PLANT OPERATING PATTERNS; (CCC) COPIES OF FUEL CONTRACTS; FUEL

18 ANALYSES AND HEATING VALUES; FUEL STORAGE AND CONSUMPTION RECORDS;

19 (DDD) FOR OVERALL SYSTEM RECORDS SHOWING SEASONAL, WEEKLY, AND

20 DAILY LOAD VARIATIONS; UNIT AND PLANT AVAILABILITY FACTORS;

21 VOLTAGE CONTROL METHODS AND PROBLEMS; SPECIFIC PLANT/UNIT

22 OPERATING OR MAINTENANCE DEFICIENCIES; ANY ENVIRONMENTAL

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CONSIDERATIONS AFFECTING OPERATIONS; (EEE) FOR FUTURE SYSTEM FACILITIES ENERGY AND POWER LOAD FORECASTS THROUGH 1995 INCLUDING ASSUMED LOAD FACTORS AND DEVELOPMENT PROGRAM FOR GENERATION, TRANSMISSION AND DISTRIBUTION WITH ASSOCIATED COSTS (FFF) FOR TRANSMISSION SYSTEM UP-TO-DATE SINGLE LINE AND GEOGRAPHIC DRAWINGS SHOWING CONDUCTOR SIZES AND DATA ON SUBSTATION RATINGS, KW AND KVAR LOADING PATTERNS, SUBSTATION KWH AND KVARH LOADS FOR MAXIMUM AND MINIMUM DAYS. (GGG) FOR DISTRIBUTION SYSTEM COMPLETE INFORMATION ON PRESENT DESIGN STANDARDS AND PRACTICES SHOWING TYPICAL ARRANGEMENTS, CONDUCTOR SIZES AND SPACING, TRANSFORMER CONNECTIONS, SERVICE ARRANGEMENTS, ETC; (HHH) SAMPLE DATA SHOWING HOUR-BY-HOUR LOAD PATTERNS IN KW, KVAR AND KVA FOR TYPICAL RESIDENTIAL, COMMERCIAL AND INDUSTRIAL FEEDERS; (III) DATA ON CUSTOMER METERING POLICIES, TYPES OF METERS, CALIBRATION AND TESTING FACILITIES, ADEQUACY OF METER SUPPLIES, ETC. (JJJ) INFORMATION ON AVAILABILITY OF OVERALL SYSTEM METERING FROM GENERATION INPUT THROUGH CUSTOMER SALES TO FACILITATE LOSS ANALYSIS (KKK) IF AVAILABLE, COMPARISON FOR A GIVEN PERIOD OF GENERATING PLANT INPUT (KW, KVAR, KWH, KVARH) AND DELIVERY FROM SUBSTATIONS. (LLL) LISTS OF SPARE PART REQUIREMENTS BY PLANT, TYPE OF EQUIPMENT AND BY SOURCE COUNTRY TO FACILITATE ARRANGEMENTS FOR BILATERAL/INTERNATIONAL

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FINANCING, AND (MMM) EXPLANATION OF SPECIFIC SYSTEM PROBLEMS OR  
PLANT WEAKNESSES SUCH AS LACK OF CAPACITORS FOR POWER FACTOR  
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INFLEXIBILITY DUE TO DOWNSTREAM REQUIREMENTS, ETC. BEST REGARDS  
MASOOD AHMED ENERGY DEPARTMENT WORLD BANK

CLASS OF SERVICE	TELEX	TELEPHONE No. 970-215	DATE 8/9/83
SUBJECT	Sudan Energy Efficiency Audit		
CLEARANCES AND COPIES DISTRIBUTION	cc: Messrs. Bharier, Fish, Banks(c), Colette(c), EGY Shaukat, Ceyhan, (EAP) Nooter (EA2)		
	B Moore:bjm <i>Julian Bharier</i> Julian Bharier, Chief Energy Department		




C/HRM

## OFFICE MEMORANDUM

To: Mr. H. Ansari (EGYEA)

August 8, 1983

From: Julian Bharier (Chief, EGYEA) Subject: Malawi: Institutional Review of Energy Unit in the Economic Planning Division

You will proceed to Lilongwe, Malawi on or about August 13, 1983, for two to three weeks, to undertake a detailed review of the organizational structure, staffing and training needs of the Energy Unit attached to the Economic Planning Division. You should also review the relationships between the Energy unit and other institutions which are directly or indirectly associated with energy policy work in Malawi. This review should include the following:


- i) Organizational structure of the units involved in the energy sector.
- ii) Analysis of the responsibilities and scope of work of the Energy Unit and of its relationships with other agencies
- iii) Review of existing arrangements between the Energy Unit and other agencies and determine alternative arrangements which would facilitate decision making towards adoption of Energy policy and strategy, in a coordinated manner.
- iv) Identification of manpower, training and technical assistance (both long-term advisors and short-term consultancy) needs for establishing the Energy Unit's effective operation.

While in Lilongwe, you should also review the progress made by the Government of Malawi in implementing the main recommendations of the Malawi Energy Assessment report of August 1982. As part of this review process, you will determine the requirements for further technical assistance and prefeasibility work in the Energy Sector, some of which may be financed under the Energy Sector Management Program.

You should liaise closely with the UNDP Resident Representative's office in Lilongwe.

Upon your return, you will prepare two reports. The first will summarize your findings and recommendations in regard to the strengthening of the institutional framework for energy policy formulation and sector management. The second will be a draft Energy Assessment Status Report which will summarize the main developments in the sector since the preparation of the assessment report, describe the progress made in implementing the recommendations of the assessment and evaluate the priority areas for further technical assistance.

HAnsari/

cc & cleared in substance with: Messrs: Hall (EAl)  
and Ahmed (EGYEA) 

cc: Messrs. Rao,  Wackman, Schramm.

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- 1) MR. GARTH AP-REES  
UNDEVPRO  
KHARTOUM, SUDAN (TX. 970 214)
  
- 2) DR. CHARIF L. TUHAMI  
MINISTRY OF ENERGY AND MINES  
KHARTOUM, SUDAN (TX. 22256 PETRO SD)

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SUBJECT:		DRAFTED BY: <b>MAhmed:bjm</b>	
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TO: FOLLOWING TELEX SENT AUGUST 5, 1983 TO MR. SAYED

MOHAMED NASR ABU-FAKR, DIRECTOR GENERAL, NATIONAL ELECTRICITY CORPORATION, KARTOUM, SUDAN, MR. OSMAN MUSTAFA, MINISTRY OF FINANCE AND ECONOMIC POLICY, AND MR. MAHFOUZ TADROS, WORLD BANK RESIDENT REPRESENTATIVE, KHARTOUM, SUDAN. QUOTE RE POWER SYSTEM LOSS REDUCTION STUDY. FURTHER TO MR. SHAUKAT'S DISCUSSION WITH YOU, I AM PLEASED TO CONFIRM THAT MESSRS. BANKS AND COLLETE WILL ARRIVE KHARTOUM ON AUGUST 15 FOR APPROXIMATELY TWO WEEKS TO CARRY OUT THE FIELDWORK FOR THIS STUDY. SUGGEST THEY MEET WITH YOU AND YOUR STAFF ON AUGUST 16. GRATEFUL YOUR EARLY CONFIRMATION THAT MISSION IS CONVENIENT. COPIED TO OSMAN MUSTAFA AND MAHFOUZ TADROS. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLDBANK

END OF TEXT

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CLASS OF SERVICE **TELEX**

TELEX NO: **BOOK OF TWO**

DATE: **8/8/83**

**SUDAN: Power Loss Reduction Study**

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Julian Bhanier

DEPARTMENT **Energy**

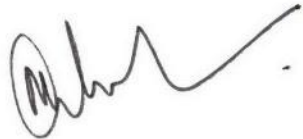
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## OFFICE MEMORANDUM

To: Distribution

August 8, 1983

From: Masood Ahmed Subject: Energy Sector Management Program - Activity Initiation ReportRe: Malawi - Institutional Review of Energy Unit in the Economic Planning Division

1. The Energy Assessment Report for Malawi <sup>1/</sup> identified the need to strengthen the management and coordination of the energy sector as a high priority task. This institutional strengthening would be required not only for the effective management of the existing operational problems in the sector (petroleum product supply interruptions, electricity pricing and investment decisions etc.) but also to enable the government to launch a major new program to improve the efficiency of energy use in the tobacco industry.

2. Subsequent to the assessment mission the government decided to establish an Energy Unit in the Economic Planning Division with overall responsibility for energy policy formulation and sector coordination. However, the Energy Unit is not yet a functional organization because it has neither the staff to carry out its mandate nor a clear definition of its precise responsibilities and work program. Moreover, while it has been recognized all along that the unit will need considerable technical assistance during its early years, the magnitude and nature of this assistance needs to be precisely determined.

3. Given these factors, the government has requested the Bank that a mission be fielded under the ESMP to help define the precise responsibilities and functions of the Energy Unit and its relationship with the other government/parastatal/private agencies involved in the sector, as well as its staffing, technical assistance and training requirements. We propose to send Mr. H. Ansari (staff consultant) to carry out this work in the second half of August. The urgency in responding to this request is due to the fact that some of the technical assistance requirements identified by this exercise are expected to be provided through the purposed Second Technical Assistance Credit which is being processed now to a tight schedule.

4. This activity is expected to cost \$20,000.

Distribution: Rovani, Rao, Sheehan, Bourcier, Sadove, Saunders, Fish, Dosik, Heron, Iskander, Kalim, Bharier, Wackman (EGY) Bronfman, Schramm, Wagner (EAP); Messenger, Hall, King (EAL)

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<sup>1/</sup> Malawi - Issues and Options on the Energy Section August 1982.



Chris for your attention

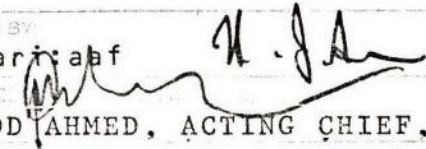
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ON TUESDAY 16TH AUGUST 1983 AT 12:40 P.M. REGARDS, MASOOD AHMED,  
ENERGY DEPARTMENT, INTBAFRAD.

END OF TEXT

CLASS OF SERVICE	<b>TELEX</b>	TELEX NO.	<b>BOOK OF THREE</b>	DATE	<b>8/5/83</b>
SUBJECT	<b>Malawi</b>		DRAFTED BY	<b>HAnsari:abf</b>	
CLEARANCES AND COPY DISTRIBUTION			AUTHORISED		
<b>cc: Messrs. Hall (EA1); Messenger (PHN); King (EA1) Erkmen, Schramm (EAP);</b>			APPROVED	<b>MASOOD AHMED, ACTING CHIEF, EGYEA</b>	
			CHECKED FOR DISPATCH	<b>Energy</b>	

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BOOK OF THREE

1. MR. CHADWICH MPHANDE  
THE PERMANENT SECRETARY  
FINANCE MINISTRY  
LILONGWE, MALAWI  
TELEX: 4407

2. MR. BOBE  
OFFICE OF THE PRESIDENT AND CABINET  
ECONOMIC PLANNING DIVISION  
LILONGWE, MALAWI  
TELEX: 4389

3. UNDP RESIDENT REPRESENTATIVE  
LILONGWE, MALAWI  
TELEX: 4466

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TO:  
  
BOOK OF THREE  
  
1) MR. SAYED MOHAMED NASR ABU-FAKR  
DIRECTOR GENERAL  
NATIONAL ELECTRICITY CORPORATION  
KHARTOUM, SUDAN  
  
2) MR. OSMAN MUSTAFA  
MINISTRY OF FINANCE AND ECONOMIC POLICY  
KHARTOUM, SUDAN  
  
3) MR. MAHFOUZ TADROS  
RESIDENT REPRESENTATIVE  
KHARTOUM, SUDAN

TELEX NO. 970-215

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CLASS OF SERVICE:	<b>TELEX</b>	TELEX NO.	DATE:	<b>Aug. 5, 1983</b>
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RE POWER SYSTEM LOSS REDUCTION STUDY. FURTHER TO MR. SHAUKAT'S  
DISCUSSION WITH YOU, I AM PLEASED TO CONFIRM THAT MESSRS. BANKS  
AND COLLETE WILL ARRIVE KHARTOUM ON AUGUST 15 FOR APPROXIMATELY  
TWO WEEKS TO CARRY OUT THE FIELDWORK FOR THIS STUDY. SUGGEST  
THEY MEET WITH YOU AND YOUR STAFF ON AUGUST 16. GRATEFUL YOUR  
EARLY CONFIRMATION THAT MISSION IS CONVENIENT. COPIED TO OSMAN  
MUSTAFA AND MAHFOUZ TADROS. REGARDS, MASOOD AHMED, ENERGY  
DEPARTMENT, WORLDBANK

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CLASS OF SERVICE	TELEX	TELETYPE	DATE	Aug. 5, 1983
SUBJECT:	SUDAN: Power Loss Reduction Study		DRAFTED BY:	MAHmed:jrs
CLEARANCE AND COPY DESK NUMBER	cleared with and cc: Mr. Nooter (EA2) cc: Messrs. Bronfman, Shaukat (EAP) Elmendorf (EA2)		AUTHORIZED BY (Name and Signature)	Masood Ahmed, Acting Chief, EGYEA
			DEPARTMENT	Energy
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## OFFICE MEMORANDUM

TO: Distribution August 5, 1983

FROM: Masood Ahmed, EGYEA 

EXT. 74545

SUBJECT: Energy Sector Management Program - Activity Initiation Report  
SUDAN: Power System Efficiency Audit

1. Action to reduce the high level of losses in the electric power system of Sudan has been identified as an important area for follow-up to the Energy Assessment Report, recently issued in blue cover. The possibility of carrying out a power loss reduction identification study under the (now defunct) UNDP Power Loss Reduction Preparatory Project had also been raised with the Government earlier this year.

2. The Government has requested that such a study now be financed through the Energy Sector Management Program. Apart from the demonstrated need for such work in Sudan, an additional benefit will be that the proposed study will enable us to test the feasibility of using the more streamlined and less expensive approach which has been developed as a result of the Preparatory Power Loss Reduction Project. Under this new approach, which is described in detail in the attached scope of work, the total cost of the identification/prefeasibility exercise is expected to be about \$50,000.

3. The consultants selected to carry out the work in Sudan are Messrs. H.D. Collette (Distribution Specialist) and A.J. Banks (General Engineer). They are scheduled to begin work in Khartoum on August 16 for about two weeks. A draft of their report should be available for comments by early October. The draft terms of reference for the study as well as the timing of the mission have been discussed and agreed with the Government by Mr. Shaukat (EAP) during a recent mission.

4. Please send any comments to Mr. E.A. Moore, Rm. E-532, or myself, Room D-449.

Distribution:

Messrs. Bronfman, Shaukat (EAP); Elmendorf, R. Nooter (EA2)  
Rovani, Rao, Bourcier, Sheehan, Sadove, Fish, Moore, Heron,  
Saunders, Dosik, Kalim, Bharier, Wackman (EGY)  
Mahfouz E. Tadros, Res. Rep., Sudan

MAhmed:jrs

## POWER EFFICIENCY AUDIT

### TERMS OF REFERENCE

#### Objective

1. The objective of the audit is to define measures to be taken to implement cost-effective modifications to system facilities, operations, and construction standards to improve the technical efficiency of the power system and to reduce non-technical losses.

#### Scope

2. The audit will include a plant-by-plant survey of generating facilities, sample diagnostic studies of transmission and distribution circuits, a critical analysis of distribution system standards and practices, and a review of customer service activities including metering and billing. In-depth studies of such areas as management and organization, staffing, financial and accounting procedures and tariffs are outside the scope of the audit except to the extent that the audit findings lead to recommendations for further studies or improvements in such areas.

#### Procedures

3. In order to assess the overall efficiency and capability of the entity, a series of short interviews would be held with members of senior management. This would show management's policy towards, and goals for, loss reduction. The information obtained on the principal problems being encountered would indicate where losses were occurring and what steps were taken or were contemplated to reduce losses.

4. The distribution system would be examined through discussions with appropriate staff and site visits to substations, distribution workshops and other facilities. Available statistics on system performance would be analyzed.

5. An assessment of the operating efficiency of thermal generating plants would be made by site visits and inspection of the equipment and through discussions and examination of plant and other records.

6. The information obtained from the above would be analyzed to identify areas where losses could be reduced; or where more detailed study would be justified; and changes or additions should be made to design criteria and operating and maintenance procedures. The course of action to implement these recommendations would be outlined.

#### Reporting

7. The results of the audit will be presented in a concise report. The recommendations will be presented in two phases:



- A. The first phase would be in the form of a short-term Preliminary Loss Reduction Project which would outline immediate steps to be taken to improve the most urgent loss problems in the Transmission, Distribution and Generation Systems. It would cover a two or three year period. The project would be described and given a justification and approximate cost estimate. When required, a Scope of Work or Terms of Reference would be provided to facilitate the contracting of consulting, engineering or other services or the implementation of the activities recommended under the project. This phase would include the following items where appropriate:

Transmission and Distribution

- (1) Design criteria and construction standards.
- (2) System planning methods and procedures.
- (3) System operations and maintenance.
- (4) Service outages and their causes.
- (5) Voltage control and monitoring procedures.
- (6) Economic system load control and management methods.
- (7) Transmission and distribution circuit analysis using computer-based programs and the data base for this analysis.
- (8) Metering systems, operation, maintenance, testing, installations and service standards.
- (9) Meter reading, billing and monitoring procedures.
- (10) Transformer specifications and load management.
- (11) System and circuit power factor measurement and corrective measures.
- (12) System technical loss assessment, value of losses and estimate of loss reduction potential.
- (13) Review of non-technical losses and measures to control them.
- (14) Construction methods, standards, equipment and procedures.

Generation

- (1) The boilers, turbogenerators and auxiliaries would be examined in detail to identify areas of losses or where rehabilitation was needed or where improvements in efficiency could be achieved. The following items would be included where appropriate:
  - (a) The scope for taking advantage of advances in technology by retrofitting more efficient parts in boilers, turbines and auxiliaries such as turbine blades and seals, boiler burners and excess air control.
  - (b) The adequacy and condition of manual and automatic controls.
  - (c) Maintenance programs, procedures and effectiveness and spare parts stocks.
  - (d) Plant operations efficiency.
  - (e) Fuel quality control.
  - (f) The needs for training programs will be assessed for Transmission, Distribution and Generating Systems in as far as this is related to improving efficiency.
- (2) A similar examination where appropriate would be made for hydro electric plants. This would include:
  - (a) Investigation of possible improvement in efficiency by turbine runner replacement.
  - (b) Penstock and trash rack cleaning.

B. The second phase would be in the form of a Long-Term Power Plant and Distribution System Betterment and Expansion Program covering a period of about five years after the Preliminary Project. This would have a general description, an order of magnitude cost estimate and be defined objectively to specify desired results, criteria and approach.

8. The short-term project would be in such form that it would be suitable for presentation for financing by a development bank or similar agency.

Criteria

9. System long-run marginal costs (LRMC) shall be used for valuing efficiency-improvement benefits. These costs shall be expressed in terms of



capacity benefits (\$/kW) and energy benefits (\$/kWh) at each principal voltage level. Costs and benefits shall be further disaggregated according to time-of-day and season when appropriate and feasible. Present-value or life-cycle costing shall be used for all analyses using appropriate opportunity costs (10% for capital unless otherwise specified). Transmission and distribution facilities shall be studied by appropriate sampling techniques using micro-processor computer programs or equivalent methodologies (programmable calculators).

#### Staffing and Work Program

10. The audit shall be performed by experienced engineers applying judgemental analysis. The field study should take two to three weeks which would allow three to four days for each major generating plant survey and two to three weeks for review of transmission and distribution systems. Total effort, including report preparation and travel, should not exceed two months for a system of average size (say, 500 MW). The cooperating entities will provide data, office space, local transportation and counterpart staff for the duration of the survey.

#### Longer Term Benefits

11. Aside from the individual projects which might emerge from this study, there is the longer term benefit of reviewing existing or starting a new, organized, continuing loss reduction program which will keep future losses at acceptable levels and maintain high plant efficiencies.

12. In many cases today, power systems are in poor condition due to past failures to expand the distribution system and to keep up with growing demand or to repeated postponement of maintenance in generating plants. This may have been caused by capital scarcity or other reasons, but as often occurs, the point may have been reached where action can no longer be put off. This type of audit of the system highlights the areas most urgently requiring attention and sets the pattern for the progressive development of a Loss Reduction or Control Program.











4th August 1983

Mr. A. M. Sutton  
Atkins Planning  
Woodcote Grove Ashley Road  
Epsom Surrey KT18 5BW  
ENGLAND (UK)

Dear Mr. Sutton:

Thank you for your cable of 3rd August. Due to certain limitations of convenience and resource we are now proceeding to develop the needed software internally and do not foresee a need for acquiring additional software for energy balances and planning for the near future.

Thank you once again for all your efforts. We will get in touch with you in the future if suitable opportunities arise.

With best regards,

Yours Sincerely,

Masood Ahmed  
Energy Assessments Division  
Energy Department



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- 1. MR. CHADWICH MPHANDE  
THE PERMANENT SECRETARY  
FINANCE MINISTRY  
LILONGWE, MALAWI  
TELEX: 4407
- 2. MR. BOBE  
OFFICE OF THE PRESIDENT AND CABINET  
ECONOMIC PLANNING DIVISION  
LILONGWE, MALAWI  
TELEX: 4389
- 3. UNDP RESIDENT REPRESENTATIVE  
LILONGWE, MALAWI  
TELEX: 4466

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TO:

FURTHER TO OUR DISCUSSIONS IN WASHINGTON REGARDING A MISSION TO HELP DEFINE THE ROLES, RESPONSIBILITY, STAFFING AND TECHNICAL ASSISTANCE REQUIREMENT OF THE ENERGY UNIT IN THE ECONOMIC PLANNING DIVISION, I AM PLEASED TO CONFIRM THAT HUMAYOON ANSARI (IRANIAN NATIONAL) WILL VISIT MALAWI FOR ABOUT TWO WEEKS STARTING AUGUST 15. (AAA) HE WILL ARRIVE LILONGWE BY AIR MALAWI, FLIGHT 212 AT 1.55 PM ON 15TH AUGUST, 1983. HE WILL STAY AT THE CAPITAL HOTEL. (BBB) WE REQUEST THAT MEETINGS BE ARRANGED WITH RELATED OFFICIALS IN GOVERNMENT DEPARTMENTS AND AGENCIES STARTING ON THE MORNING OF THE 16TH AUGUST. (CCC) PLEASE CONFIRM WHETHER PROPOSED MISSION TIMING IS CONVENIENT. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, INTBAFRAD.

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TELEX NO.:

BOOK OF THREE

DATE:

8/3/83

SUBJECT:

Malawi

DRAFTED BY:

HAnsari:aaf

CLEARANCES AND COPY DISTRIBUTION:

cc & C/w for substance: P.Hall (EA1)

AUTHORIZED BY:

Juliana Pharier, Chief

cc: Messrs. Messenger (PHN); King (EA1); Erkmen (EAP)

Energy

Schramm (EAP); Bharier (EGYEA)

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TO: MR. BAIG, NAIROBI, KENYA

(AAA) MANY THANKS YOUR TELEX RE KENYA ENERGY LOSS STUDY FOLLOWING INFORMATION MAY BE USEFUL FOR YOU.

(BBB) MR. FISH HAD BEEN IN CONTACT EAPL EARLIER THIS YEAR ON CARRYING OUT SUCH A STUDY AND THEY HAD INDICATED CONSIDERABLE INTEREST AT THAT TIME.

(CCC) REGARDING TIME, WE ARE CARRYING OUT A SIMILAR EXERCISE IN SUDAN DURING THE SECOND HALF OF AUGUST AND WOULD THEREFORE PROPOSE THAT THE TEAM VISIT NAIROBI FOR THE FIRST TWO WEEKS OF SEPTEMBER. THANK YOU AND REGARDS, MASOOD AHMED

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SUBJECT:	DRAFTED BY: Masood Ahmed:bjm				
CLEARANCES AND COPY DISTRIBUTION: cc: Messrs. Anderson, Erkman, Moore	BY (Name and Signature): Julian Bharier, Chief				
	DEPARTMENT: Energy Department, WORLDBANK				
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DIST: MR. BHARIER

MR. DUNN

*Masood*

1983 AUG -4 AM 12:33

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.JBRONAI

FOR MASOOD AHMED

RE YOUR TELEX JULY 28 ON KENYA ENERGY LOSS STUDY. HAVE SPOKEN  
TWICE TO MASAKHALIA WHO IS DISCUSSING PROPOSED MISSION WITH  
MINISTRY OF ENERGY AND EAPL. WILL LET YOU KNOW RESULTS AS SOON  
AS POSSIBLE.

REGARDS, BAIG.

NNNN



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DIST: MR. BHARIER

MR. DUNN

Masood

1983 AUG -4 AM 12:30

COMMUNICATIONS DIV.

ZCZC NAI 2826

EGYD?

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FOR MASOOD AHMED

RE YOUR TELEX JULY 28 ON KENYA ENERGY LOSS STUDY. HAVE SPOKEN  
TWICE TO MASAKHALIA WHO IS DISCUSSING PROPOSED MISSION WITH  
MINISTRY OF ENERGY AND EAPL. WILL LET YOU KNOW RESULTS AS SOON  
AS POSSIBLE.

REGARDS, BAIG.

NNNN

## OFFICE MEMORANDUM

Date: August 3, 1983

To: Distribution

From: Masood Ahmed/EGYEA

Subject: PNG - Energy Assessment Status Report

1. Attached please find the final draft of the above report which has been reviewed in the Bank and cleared for external distribution by the Government of PNG. This work was carried out under the joint UNDP/World Bank Energy Sector Management Program.

2. As part of the followup to this report, an ESMP financed mission will visit PNG in September 1983 to carry out an institutional review of the Department of Minerals and Energy. This review will make recommendations on the structure and staffing of the Department to enable it to discharge its responsibilities for energy sector management and policy formulation. The review will also define the technical assistance and training needs of the Department in this regard. A separate mission, also under the ESMP, is also planned to advise the Government on the regulations and tariff schedules governing the cogeneration/autogeneration of electricity. The timing of this mission has yet to be determined.

Distribution: Messrs.: Hasan, Adams(AENVP); Kirmani, Baldwin, Beach, Cordukes, Aguilar(AEP); Jaycox, Dutt, Berlin, (Ms) Farmer(AEA); Rajagopalan(PAS); Waide(CPD); Dewey(IND); Rovani, Sadove, Sheehan, Bourcier, Rao, Fish, Dosik, Heron, Saunders, McCarthy, (Ms) Vedavalli, Bharier, Wackman(EGY); Stephansen(CAS).

EGYEA staff.





# Joint UNDP/World Bank Energy Sector Management Program

Activity Completion Report

No. 006/83

**DECLASSIFIED**

**NOV 30 2022**

**WBG ARCHIVES**

Country: PAPUA NEW GUINEA

Activity: ENERGY ASSESSMENT STATUS REPORT

July 1983

**Report of the Joint UNDP/World Bank Energy Sector Management Program**  
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without authorization from the Government, the UNDP or the World Bank.

## Energy Sector Management Program

The Joint UNDP/World Bank Energy Sector Management Program is 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 produced under another Joint UNDP/World Bank Program, or in carrying out prefeasibility studies for energy investments identified in these reports.

The Energy Sector Management Program can provide the following types of assistance for countries which have had assessments:

- assistance to improve a government's ability to manage its energy sector, for example by defining staffing and work programs, evaluating management information needs, identifying sources of public and private finance, developing a medium-term investment plan;
- prefeasibility work on priority investment plans, especially those which will improve the efficiency of energy use, bring about economic fuel substitution, or provide enough affordable energy to rural areas;
- specific short-term assistance in institutional and manpower development, both at the sectoral and agency levels.

The program aims to supplement, advance and strengthen the impact of bilateral or multilateral resources already available for technical assistance in the energy sector.

### Funding of the Program

The Energy Sector Management Program is designed to be a major international effort. The Program has been initiated with core financing from the UNDP and the World Bank. Important financial contributions have also been made by the Governments of Australia, Denmark, Finland, Netherlands, New Zealand, Sweden and United Kingdom. Further resources are being sought from major donor agencies in order to realize the full potential of the Program to respond to the urgent needs of the developing countries for this type of assistance.



PAPUA NEW GUINEA

ENERGY ASSESSMENT STATUS REPORT

July 1983

## PAPUA NEW GUINEA

### ENERGY ASSESSMENT STATUS REPORT 1/

#### I. BACKGROUND AND SUMMARY

1.01 Papua New Guinea imports virtually all of its commercial energy in the form of petroleum products even though it has a diverse and potentially very large indigenous energy resource base. This paradox is due to two factors. First, the indigenous energy resources have not been adequately defined; and second, the small and fragmented nature of domestic energy markets makes the economic development of these resources additionally complicated. The principal focus of the energy assessment mission which visited PNG in November 1981 was to help define a strategy to overcome these difficulties. The two main strands of this strategy as recommended in the mission's report 2/ were:

- (i) to accelerate the identification and development of PNG's petroleum potential for domestic markets and/or for export; and
- (ii) to analyze the various options for electric power generation and thus to put into place a revised power supply system which would result in a cheaper and more reliable supply of electricity.

1.02 The report also made a number of other recommendations including the rationalization of the previously excessively large and diverse program to develop nonconventional, renewable energy sources, and the strengthening of the institutional framework for the energy sector to enable the Government to effectively address the above issues.

1.03 The Government's response to the issues identified by the energy assessment report has been remarkably quick and wide ranging. Work has begun on most of the studies and further analysis required to define a strategy for petroleum development and utilization and for the preparation of a least cost power development plan. The renewable energy development program has been further scaled down and reoriented to technologies which are likely to have earlier and more certain payoffs for the country. However, on the institutional question while progress has been made on strengthening the policy and technical capability at the sectoral level, its pace has been slow and further action is urgently required. This is particularly so in the petroleum sector, where the existing institutional structure and staffing will soon become inadequate

1/ This report was prepared by a mission comprising Messrs. M. Ahmed and N. B. Prasad which visited Papua New Guinea in June 1983.

2/ Papua New Guinea: Issues and Options in the Energy Sector, June 1982. Report of the Joint UNDP/World Bank Energy Assessment Programme.



to cope with an increasing level of private exploration and development activity. Support for institutional strengthening should therefore be a high priority in the future technical assistance programs of donor agencies. In parallel, the Government will also need to make a substantial reallocation of its own staff resources to the energy sector and to revise and streamline the existing institutional arrangement for the management of this sector.

## II. ENERGY SECTOR DEVELOPMENTS, NOVEMBER 1981 - JUNE 1983

2.01 The major developments in the energy sector since the November 1981 assessment mission are summarized below. On the demand side, the consumption of both petroleum products and electricity stagnated in 1982, partly because GDP fell by an estimated 1% and partly because of the sharp rise in electricity tariffs in January 1982. Total petroleum product consumption in 1982 is estimated at 644 ktoe (1981: 675 ktoe) and total electricity generation in the public system was 442 GWH (1981: 460 GWH). Because of continued poor rainfall thermal generation accounted for 36% of total generation (the same as in 1981). The oil import bill in 1982 (K147 million) was also the same as in 1981. Despite the fall in crude oil prices, 1983 oil imports will not cost significantly less because of the devaluation of the Kina in March 1983 (about 10% against the US dollar). After increases of 70% in the period November 1980 - December 1981, electricity tariffs remained constant upto May 1983. In June 1983 the tariff structure was revised to provide a uniform national tariff of 16.0 toea/KWH (average sales price in 1982 was about 13 toea/KWH). The new tariff structure results in a serious disparity between costs and tariffs for the various independent supply grids because the costs of power supply in these grids are very different.

2.02 On the supply sides, the main developments have been in the petroleum sector. There has been an increase in exploration interest with Shell/Amoco applying for a license in the North New Guinea basin and some smaller companies applying for licenses in the Gulf area (south of Pasca) and in areas adjoining the Barikewa concession. Some preliminary seismic and geochemical work has also been undertaken in the Cape Vogel basin. There has been a gas and condensate discovery by Gulf oil at Juha in the Southern Highlands. The potential of this deposit (initial flows 8.3 MMCFD of gas and 580 barrels/day of condensate) is being investigated. An important negative development has been the blowout of the second Pasca well in February 1983, which has still not been stemmed. The inadequate and slow response in dealing with the blowout problem has highlighted the urgent need to streamline and strengthen the Government's capability for managing petroleum exploration and development. This is reinforced by the need to formulate quickly a comprehensive strategy for the utilization of proven gas resources.



2.03 In the other energy subsectors, important developments include the commissioning of a second 20MW gas turbine in the Port Moresby system. The Ramu ethanol project is progressing according to schedule and agreements have been reached with the oil companies to market a 20% ethanol blend gasoline in the Lae area when production starts later this year. Finally, as discussed in Section IV below, considerable progress has been made in identifying and realizing the potential for improved energy efficiency in the industrial and commercial sectors.

### III. ON-GOING TECHNICAL ASSISTANCE ACTIVITIES

- (i) The World Bank: Assistance is being provided under a Petroleum Exploration Technical Assistance Project (cofinanced with the OPEC Fund) to strengthen the monitoring and promotion capability in the petroleum sector. In addition, the Bank has been closely involved with the broader follow-up to the energy assessment. A July 1982 mission assisted in the preparation of terms of reference for a variety of coal and power subsector studies which have since been started. Subsequently, a March 1983 mission reviewed and commented upon the drafts of many of these studies and proposed additional work required to complete them. The Bank's regional projects staff continue to be involved in the final stages of this work.
- (ii) The New Zealand Government is funding the foreign exchange costs (about K150,000 over 1 year) for a mini-hydro resource inventory; this may be renewed for another year.
- (iii) A number of regional assistance programs may provide financing for small renewable energy and conservation projects. These include the EEC (administered by the South Pacific Bureau for Economic Cooperation), UNDP's Pacific energy program, and Commonwealth Heads of Government Regional Meeting Special Energy Funds; and bilateral assistance from the Australian and New Zealand Governments.

### IV. STATUS OF ENERGY ASSESSMENT RECOMMENDATIONS

#### Petroleum

- (i) Induce oil companies to accelerate their exploration activities to firm up reserves and reach agreement on the development of discovered gas fields. Work programs proposed for new licenses and for renewal of existing licenses are being reviewed to this end by Petroleum Resources Assessment Group (PRAG) and its consultants. Recent onshore find at Juha (gas/condensate) being evaluated. See below for development activities.



- (ii) Carry out utilization studies on onshore/offshore gas fields .

Pasca: Consultant prefeasibility study of field development completed April 1983; utilization study for petro-chemicals completed April 1983; suggests production of ammonia-urea onshore as most promising but still marginal prospect; private study on barged transport of pressurized LNG to Bougainville Copper Mines received May 1983 and being reviewed; however all further work on hold because of well blowout.

Barikewa: Desk study by Elcom on using this deposit for power supply to Ramu grid is being reviewed by Government and may need to be reworked using more recent information on costs and reserve potential provided by consultant studies financed through the Petroleum Exploration Technical Assistance Project. In particular feasibility of using slim hole drilling to reduce cost needs to be considered.

#### Electric Power

- (iii) Analyze options for Ramu and Port Moresby grids and prepare least cost power development program

The following studies have been completed by consultants employed by Elcom:

- a) Port Moresby 25MW coal fired station costing study (March 1983).
- b) Port Moresby System - Investigation of hydro power alternatives (interim report, December 1982).
- c) Ramu System - Investigation of Hydro power alternatives (interim report, January 1983)
- d) Barikewa Gas - preliminary assessment (in house Elcom Study, February 1983).

These studies are now being reviewed by the Bank and by Elcom's resident consultants who will also prepare a least cost development program for the power system. This analysis will also take into account the utilization of large size slow/medium speed diesel and of interconnecting the Ramu/Port Moresby systems.

(iv) Compile an inventory of major hydro sites and introduce gauging stations on small hydro sites for which there are no flow records.

Work has begun with financial assistance of the Bank. About 60 sites of 30 MW or more will be covered in a two year inventory; gauging network is expanding but shortage of counter part funds is slowing down both efforts.

(v) Investigate use of wood and wood wastes for power generation.

Economic potential for using wood waste for supply to Elcom grid appears smaller than initially envisaged; evaluation of smaller sized plants (direct burning and gasifiers) being done to supply rural industry.

(vi) Analyze economics of shifting Bougainville copper mines power generation from oil to coal.

No decision has been reached on Bougainville's future energy supply mix because the costs and feasibility of generating electricity from Luluai hydro scheme and Pasca gas (LNG/LPG) are still being evaluated.

(vii) Carefully analyze economics of Rouna 4 project before embarking on it.

Further Government analysis of this project continues in view of potential bilateral concessionary financing that is tied to it.

Coal

(viii) Analyze commercial viability of developing Purari coal deposit.

In-house study carried out by Geological Survey in early 1983 indicates that such development would not be commercially viable at this time.



Conservation

No specific recommendation.

Energy audits completed on 4 hotels, a hospital, a brewery and several other sites. Savings of 20-50% on energy bills identified in most cases; partial or complete implementation of recommendations proceeding (payback periods 0-3 years). Demonstration projects on lighting, air conditioning and waste heat recovery commencing in public sector.

Cogeneration

No specific recommendations.

Highly economic private sector cogeneration applications identified in breweries, other industries and hotels. Investment may not proceed because of uncertainty over Elcom standby tariffs. This question needs to be analyzed urgently to permit economic cogeneration to proceed.

Renewables

(ix) Restrict investment in ethanol to the Ramu project and evaluate critically all other proposals.

Ramu project is nearing completion. Baiyer River project has been cancelled. No other ethanol projects are planned.

(x) Halt or reduce investments in biogas, pyrolysis and photovoltaic experimental projects.

No further investments made in biogas and pyrolysis; photovoltaic investments are being limited to proven applications and to demonstration projects where tied aid is involved. A significant program for the demonstration of power gasification is envisaged with EEC support.

(xi) Continue to support solar water heaters in the residential/commercial sectors.

Solar water heaters continue to flourish. The current installed number is about 7,500 of which 90% are in residences.

## Institutions

(xii) Strengthen the institutional capability for dealing with the oil and gas sector and consider the eventual establishment of a separate oil and gas agency.

Some progress has been made through the establishment of PRAG and the assistance provided by the Bank assisted Petroleum Exploraton Technical Assistance Project. The institutional structure and staffing in this area need to be reviewed (see Section V below).

(xiii) Reorient work of Energy Planning Unit to focus on all energy sources and create a separate unit for the implementation of renewable energy and conservation measures.

Given the cutback in the renewable energy program the Government has decided not to create a separate unit for this area. The mission agrees that this is not a high priority now. EPU's focus is also being broadened to cover conventional energy sources, including petroleum. Energy demand forecasts and alternative supply scenarios have been prepared. However, as noted below, EPU's staffing needs to be considerably strengthened to enable it to discharge those broader responsibilities effectively.

## V. PRIORITIES FOR TECHNICAL ASSISTANCE

### (1) Institutional Review of Energy Planning

5.01 The two most important components of the energy sector in PNG are petroleum and power. The most significant development noted by the mission since the publication of the Assessment Report has been the acceleration of activity in the petroleum subsector. This acceleration has put increased strain on the three Divisions of DME involved in the petroleum sector (viz. Mines, Policy and Planning, and Geological Survey) and has highlighted the difficulties of coordination between those Divisions. These difficulties also extend to the interface between DME and the Electricity Commission on the evaluation of various options for the use of indigenous gas reserves (Barikewa, Pasca and most recently Juha) for power generation.

5.02 It has been agreed by the Secretary of DME that a comprehensive review of institutional responsibilities and capabilities in the energy sector is now urgently required to avoid the prospect of DME itself



becoming a bottleneck on the near-term development of PNG's petroleum resources both for export and for domestic use. This review would encompass all relevant Divisions of DME, their interrelationship, as well as their relationship with other energy agencies such as the Electricity Commission. In the petroleum subsector the focal point of the review would be the Petroleum Advisory Board, chaired by the Secretary of DME. This review would define the respective responsibilities of the various parts of the DME in the area of energy sector management and planning. It would also identify the staffing and technical assistance that would be needed to help DME carry out these tasks effectively. The review would also define the training required to ensure progressive build-up of an indigenous energy planning capability within PNG.

5.03 The Government has requested, and the mission strongly supports, that such a review be carried out urgently under the Energy Sector Management Program. The required input is estimated at two to three man-months.

(ii) Co-generation and Auto-generation

5.04 At the time of the Assessment Report it was felt that the Government's policy on energy pricing had resulted in a broadly appropriate structure of incentives for energy production and consumption. The mission notes that a system of uniform national tariffs for electricity has since replaced the previous cost-based structure and, as a result, a number of fuel substitution anomalies have recently arisen. In particular, the present combination of electricity tariffs and standby charges appears to be preventing the development of a number of economic options for cogeneration and auto-generation in the private sector.

5.05 To resolve these issues, and to promote a balanced development of private and public sector least-cost energy supply options for both heat and power, a study is required of the structure of tariffs and regulations governing cogeneration. This study would be based on a review of time-pattern of production costs in each of the Electricity Commission's supply grids.

5.06 Again, the Government has requested and the mission proposes that this study be funded under the Energy Sector Management Program, with the required input estimated at 6 - 8 staff weeks.

(iii) Information Base for Energy Planning

5.07 The mission notes that considerable effort has been made recently to fill in gaps in the energy data base and to exploit this information for systematic planning of medium-term energy options. This activity now appears to be constrained by a shortage of suitably-trained staff and by the limitations of manual data processing.

5.08 It was agreed that the institutional review (in (i) above) could usefully define how these needs could be met through a range of data processing options (both hardware and software components). ESMP funding for implementing these options is not envisaged but some funds may be required to assist the PNG Government to find a suitable source of funding.



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

(AAA) RE YOUR TELEPHONE CONVERSATION WITH JULIAN AND DESIRE TO  
 POSPONE PNG MISSION TO SEPT 12. THIS MAY BE DIFFICULT BECAUSE  
 KERRY DOBLE (CHIEF GEOLOGIST) PLANS TO LEAVE PORT MORESBY ON SEPT  
 14 FOR HOLIDAY. I THINK IT WOULD BE USEFUL FOR MISSION AND  
 PARTICULARLY YOURSELF TO OVERLAP WITH HIM BEFORE HE LEFT GIVEN  
 KEY ROLE OF HIS GROUP IN PETROLUUM MATTERS. HOWEVER AM STILL  
 WAITING FOR CONFIRMATION OF SEPTEMBER 5 DATE FROM GOVERNMENT AND  
 WILL REVERT TO YOU ONCE THIS IS RECEIVED. IN THE MEANTIME PLEASE  
 LET ME KNOW IF SEPTEMBER 5 DATE OUT OF QUESTION FOR YOU IN WHICH  
 CASE WE WILL TELEX GOVERNMENT ACCORDINGLY.

(BBB) FOR YOUR INFORMATION THE FOLLOWING TELEX WAS SENT TO BILL  
 MCCANN ON JULY 28 REGARDING THE PROPOSED MISSION QUOTE (AAA) RE  
 YOUR TELEX OF JULY 22 TO MR. BHARIER. FINAL VERSION OF ENERGY  
 ASSESSMENT STATUS REPORT SENT TO YOU EARLIER THIS WEEK ALONG WITH  
 A LETTER CONFIRMING THAT INSTITUTIONAL REVIEW OF DME AND COGENERA-  
 TION/AUTOGENERATION STUDIES CAN BE FINANCED THROUGH ENERGY SECTOR  
 MANAGEMENT PROGRAM. (BBB) REGARDING INSTITUTIONAL REVIEW, DR.  
 PRASAD HAS AGREED TO HEAD MISSION TO CARRY OUT THIS ANALYSIS AND  
 WE HAVE PROPOSED THAT THE TEAM ARRIVE IN PORT MORESBY IN FIRST  
 WEEK OF SEPTEMBER FOR UP TO THREE WEEK STAY. IN ADDITION TO DR.

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CLASS OF SERVICE: Telex TELEX NO.: 0155-483 DATE: 8/2/83

SUBJECT: DRAFTED BY: MAHmed:bjm

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TO: PRASAD, MISSION WOULD COMPRISE STAFF ECONOMIST MR. ALLAH DAD AND CONSULTANT PETROLEUM SPECIALIST MR. DUMESTRE. MISSION'S SCOPE OF WORK WOULD BE AS AGREED DURING OUR RECENT MISSION. GRATEFUL FOR YOUR EARLY RESPONSE ON WHETHER THE PROPOSED MISSION TIMING IS CONVENIENT. (CCC) RE AUTOGENERATION STUDY, WE ARE IN THE PROCESS OF IDENTIFYING SUITABLE CANDIDATES AND WILL REVERT TO YOU ON THIS MATTER SHORTLY. IN THE MEANTIME IT WOULD BE USEFUL IF YOU COULD SEND US DRAFT TERMS OF REFERENCE FOR THIS STUDY AND IN PARTICULAR WHETHER YOU WOULD LIKE THE STUDY TO COVER OVERALL ELECTRICITY TARIFFS OR JUST THE TARIFFS/REGULATIONS GOVERNING COGENERATION/AUTOGENERATION. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLDBANK  
UNQUOTE REGARDS MASOOD AHMED

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CLASS OF SERVICE: <b>Telex</b>	TELEX NO.: <b>0155-483</b>	DATE: <b>8/2/83</b>
SUBJECT:	DRAFTED BY: <b>Mahmed:bjm</b>	
CLEARANCES AND COPY DISTRIBUTION:	AUTHORITY (Signature): <b>Julfan Sharier, Chief</b>	
	DEPARTMENT: <b>Energy Department, WORLDBANK</b>	
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TO: J. DOYEN, INTBAFRAD, KIGALI, RWANDA.

(AAA) KING SCHEDULED TO VISIT RWANDA FOLLOWING ONE WEEK MISSION TO BURUNDI STARTING ON AUGUST 12. TIMING OF BURUNDI MISSION HAS BEEN CONFIRMED BY GOVERNMENT AND IS ALSO FIXED BY NEED TO OVERLAP WITH A CONSULTANT MISSION ON PETROLEUM SUPPLY MANAGEMENT WHICH IS ALREADY IN BURUNDI. THUS DELAY OF RWANDA MISSION TO EARLY SEPTEMBER WOULD BE DIFFICULT. UNLESS IMPERATIVE TO DELAY, WE WOULD THEREFORE LIKE KING TO ARRIVE IN KIGALI ON AUGUST 19 FOR ABOUT ONE WEEK. YOUR PRESENCE DURING THE MISSION WOULD OBVIOUSLY BE HIGHLY DESIRABLE BUT IS PROBABLY NOT ESSENTIAL GIVEN THAT THE OBJECTIVE OF THE MISSION IS PRIMARILY TO FOLLOW UP ON EARLIER SECTOR WORK DONE BY THE ASSESSMENT MISSION. PLEASE ADVISE. REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLD BANK.

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CLASS OF SERVICE: **Telex** TELEX NO.: **REVR TLX NO. 240/83** DATE: **8/2/83**

SUBJECT:  
  
CLEARANCES AND COPY DISTRIBUTION:  
**Messrs. Erkmen(EAP) de Capitani**  
**(EA2)**  
**Ms. Monceaux (EA2)**

DRAFTED BY:  
**N. King**  
AUTHORIZED BY (Name and Signature):  
**Julian Bharier, Chief**  
DEPARTMENT:  
**Energy Department**

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TO: UNDEVPRO, PORT LOUIS

3 (AAA) FOR DANISMAN, RE ENERGY PLANING AND MANAGEMENT PROJECT.  
 4 FURTHER TO MY LETTER OF 7/13/83 TO MR SUMODHEE PS MEIC, COPIED TO  
 5 YOU, I WOULD LIKE TO FIRM UP TIMING OF SEPTEMBER MISSION TO  
 6 SUPERVISE THE ABOVE PROJECT AND TO FOLLOW UP ON THE OUTSTANDING  
 7 POINTS RAISED IN MY LETTER. GIVEN OTHER TRAVEL COMMITMENTS, I  
 8 WOULD PROPOSE A MISSION FOR SEPTEMBER 12 - 17. WHICH SHOULD  
 9 PROVIDE A TWO WEEK GAP AFTER THE GENERAL ELECTIONS. (BBB) I WOULD  
 10 BE GRATEFUL IF YOU COULD OBTAIN THE GOVERNMENT'S CONFIRMATION OF  
 11 THE PROPOSED MISSION. (CCC) MANY THANKS AND REGARDS. MASOOD AHMED  
 12 ENERGY DEPARTMENT

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OF  
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CLASS OF SERVICE: FR/Telex

TELEX NO.: 4259 UNDP IW

DATE: 8/2/83

SUBJECT: Energy Planing/Mgmt Project

DRAFTED BY: Masood Ahmed

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):  
Julian Bharier, Chief

DEPARTMENT:  
Energy Department, WORLDBANK

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FORM NO. 75  
(9-78)

THE WORLD BANK

ROUTING SLIP		DATE: 8/2/83
NAME		ROOM NO.
Messrs. Rao, Bourcier,		
Kalim, Rovani		
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:		
FROM: M. Ahmed	ROOM NO.: D449	EXTENSION: 74545

FORM NO. 75  
(9-78)

THE WORLD BANK

ROUTING SLIP		DATE:
NAME		ROOM NO.
Mr. E. Stern(SVPOP)		E]227
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 please find		
-- notes for your opening statement at tomorrow's press conference		
-- draft answer to Mr. Burnham's question on fuelwood lending which may also be useful		
FROM:	ROOM NO.:	EXTENSION:
Masood Ahmed	D449	74545

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DRAFT 8/2/83

"The Energy Transition in Developing Countries"  
Points for Opening Statement at Press Conference

1. Background/Rationale/Objectives of ETDC

- Despite current softening of oil prices, adjustment of energy supply and demand patterns remains an essential feature of the overall adjustment process for most developing countries.
- Some progress has been made in these countries in both demand management and supply development, (as well as the policy and institutional framework to support these changes) but progress has been uneven and much more remains to be done to complete the transition to an era of high energy costs.
- The last World Bank report on this subject was "Energy in the Developing Countries" (August 1980); since then the Bank's involvement in the energy sector has expanded and diversified and both the developing countries and the Bank have gained valuable additional experience on how to deal with a variety of complex energy issues.
- The objective of this report is to bring together the principal lessons learned from this experience and to evaluate the financial, institutional, policy or other constraints that need to be overcome to enable developing countries to successfully complete the energy transition. This analysis also provides a basis for reexamining the rationale for the World Bank's current and future activities in the energy sector.

2. Principal Conclusions of Report

- Recent decline in oil prices does not reduce the priority and urgency of making adjustments to both energy demand and supply patterns in the developing countries; because (i) cost of energy imports is still a serious factor for OIADC's (ii) most LDC's have still not even completed the adjustment to the pre 1979-80 price increases and (iii) although there will continue to be short term fluctuations in oil prices, a revival in global economic activity will lead to an increase in world oil demand and consequently a strengthening of international oil prices.
- Equally important, the report confirms that there is a substantial potential for improving the energy prospects of most LDC's by improving the efficiency of energy use and by developing and importing cheaper alternatives to oil.
  - (i) Between 1980 and 1995 the share of oil in total commercial energy consumption in the LDC's could fall from 47% to 36%. This means that oil will account for only 25% of the incremental energy consumption in these countries between 1980-95 compared with 46% in the 1970's.
  - (ii) Lower share of oil is made possible by increased reliance on natural gas and primary electricity sources whose shares increase over the period. Coal use - both from domestic production and from imports - also increases rapidly in a large number of developing countries.
  - (iii) Reduced reliance on oil is particularly important for the OIADC's. Their oil imports are projected to grow at less than 2% per year over 1980-95 (compared with 6% p.a. in 1970's) and



their share of total energy consumption met from oil imports drops from 44% in 1980 to 28% in 1995.

- Bringing about these improvements will require:

- (i) a major effort on the part of developing countries to define clear and realistic strategies for energy development and to strengthen the management of the sector; and
- (ii) an equally substantial effort on the part of developing countries and official and private financing agencies to ensure that adequate financial resources are mobilized to undertake these energy investments.

3. Priorities for Action

Energy Policy Formulation and Sector Management

Priority areas for action include

- (i) rationalizing energy pricing policies to encourage efficient consumption as well as to ensure the financial viability of energy supply agencies - in OICD's the most widespread problem is electricity tariffs;
- (ii) Formulating a clear, resource development strategy which defines the contribution of the various private and public, local and international agencies that can participate in this effort in accordance with their strengths and preferences;
- (iii) acting to improve the efficiency of energy use in industry, transport, etc. as well as within the energy sector, for example by reducing losses in electric power generation and distribution.
- (iv) Strengthening the institutional and management capabilities at the sectoral level to improve coordination among various energy

agencies and between the energy sector and the rest of the economy.

The principal impetus for this effort must come from the LDC's themselves but external agencies can help by providing advice and well focused technical assistance.

Financing and Resource Mobilization.

- Magnitude of future energy investment requirements poses a major financing problem. The report estimates that as a group the developing countries need to invest on average US\$130 billion per year (in 1982 dollars) for energy projects over the next decade. About half of these requirements (US\$64 billion per year) will be in foreign exchange which compares with an estimate of US\$25 billion for the actual flow in 1982 of external capital from all sources to finance energy investment in the LDCs. Thus, these flows need to increase by about 15% per year in real terms. The mobilization of adequate local resources to meet the other US\$66 billion per year of projected investments will require an equally major effort; this is particularly the case for investments in electric power which have a high local cost component in most countries.
- The precise US\$130 billion/year figure is based on a number of specific assumptions (most important being a 4.8% per year average growth rate for 1980-95). However, important to emphasize that these investments - which were derived from a country by county review of energy demand and supply prospects -- are technically feasibly, economically profitable and take into account market constraints and institutional limitations. Moreover, with a few exceptions (which are stated in the report) the bulk of these investments would continue to be economically viable even if oil prices settled at as low a price as US\$25/bbl (in 1983 dollars) over the long run.



- Notwithstanding their attractive economics there is a real danger that some of these investments might be postponed because the required resources are not available. Applies particularly to low income countries whose access to commercial sources of finance is very limited and whose margin for generating additional resources locally is also small.
- The following actions are needed to help overcome the resource mobilization problem.

Developing countries can:

- (i) price energy products to generate more local resources;
- (ii) establish a policy and operational framework that encourages private equity investment in energy, particularly in the oil and gas sector;
- (iii) package investment projects so that they are more amenable to official and commercial external financing;
- (iv) make increasing use of non recourse or limited recourse project financing techniques, particularly in the oil and gas sector.

Official financing agencies can:

- (i) maintain or enhance the priority attached to energy in their overall portfolio;
- (ii) reorient their energy lending to respond more closely to the changing needs for different types of energy investments in LDC's; in particular the much larger share of investment required for the petroleum subsector compared with historical trends;
- (iii) focus their energy lending on low income developing countries or other oil importing countries which have limited access to commercial energy financing;
- (iv) maximize their catalytic role in mobilizing additional external finance for priority investment projects.

4. The Role of the Bank

The Bank has accorded a high priority to energy in its overall program because of:

- (i) the critical impact of adjustments in this sector on the overall growth prospects of LDC's;
- (ii) the massive needs for financial and technical assistance to complete the process of adjustment in the energy sector; and
- (iii) the contribution that the Bank can make in terms of financial support, policy advice, institutional strengthening, technology transfer and improved project selection, design and implementation.

- The Bank has a large and diverse energy lending program and is a major source of policy advice and technical assistance to its borrowers. During FY83 the Bank (and IDA) lent \$3.0 bn, which makes it the largest single official source of external capital for energy development in the LDC's. However, the Bank's energy lending is only a small fraction of the total energy investment requirements of these countries (less than 5%). Moreover, this energy lending can only increase in line with total Bank lending because of the impact of the 25% ceiling on energy lending that the Bank has imposed to ensure that priority projects in other sectors can be accommodated.

- Given these factors, the Bank has sought to play a major catalytic role in mobilizing other financing source. It does this through

- (i) cofinancing of its projects - every \$1 of Bank energy lending over FY79-82 generated an additional \$1.13 from other external sources; also, new cofinancing investments ("B" loan etc.) are being developed to further increase cofinancing



(ii) Promoting direct private investment - both through its projects and through overall policy dialogue. Largest potential in oil and gas where a number of instruments are used: exploration promotion projects, financing government share in joint ventures with international oil companies, etc;

- letter of cooperation and other arrangements.
- overall sector dialogue also helps to identify and resolve broader issues (such as pricing or contractual arrangements) which may be acting as a barrier to increased private investment.

---

Note: Re: consistency with WDR '83.

Except for rounding errors introduced by the use of different units (toe for ETDC and mbdoe for WDR) the underlying figures between the two reports are entirely consistent. However you should be aware of the following problems relating to figure 3.1 of WDR (Global Energy Consumption, 1970-95, pg. 29).

- (i) the labelling of gas and solid fuels has been inverted;
- (ii) the numbers are in million barrels per day of oil equivalent not million barrels of oil equivalent as stated;
- (iii) the numbers themselves are apparently from an out of date printout and consequently differ slightly from the correct ones which appear in table 3.2 on the following page.

A corrigendum noting these points is being prepared by ERS.

M. Ahmed/bjm

QUESTION NO. 24

In para 1.18 the Bank states that developing countries consume as much biomass energy as they do commercial fuels. But the Bank has undertaken 44 oil and gas projects (Box 1.1) compared to 31 free-standing forestry projects (Box 3.5) during roughly the same period. Why has this been the case?

ANSWER

Since 1976, the Bank has lent more than US \$ 380 million for fuelwood projects, of which US \$ 165 million were lent in the past 3 years. However, our fuelwood lending has been constrained by a combination of factors, the most important of which is the serious lack of required infrastructure and institutional capability on the part of most developing countries to support large-scale fuelwood planting. The establishment of nurseries and other facilities, settlement of land issues, training of foresters and extensionists, development of appropriate technical packages, and the carrying out of required research have all proven to be a long and difficult process. In addition, some developing country governments have been insufficiently aware of the fuelwood problem, unwilling to review price and other incentives essential to sustainable fuelwood programs, and/or unable to mobilize local counterpart funding. Bank lending program constraints, particularly in IDA countries, have also impeded our fuelwood lending. A positive factor that has nonetheless affected the level of Bank lending has been the increased interest of other bilateral donors to provide grant financing in this area.



## OFFICE MEMORANDUM

Masood Ahmed  
 Thanks  
 Copy to Magdi  
 + BSB S.  
 Also for F. Julie

To: Mr. Julian Bharier

Date: August 1, 1983

From: Masood Ahmed 

Subject: LAC-1 Departmental Staff Meeting

1. As we agreed, I joined LAC 1's fortnightly departmental staff meeting Friday and briefed them on the Energy Assessments and Sector Management Programs. My presentation, which lasted about 20-25 minutes, focussed on describing what the programs were all about; their current status; how the assessments related to and differed from other sector work done in the Bank; what lessons we have learned in terms of general trends, etc.; and how we are following up on the assessments through the ESMP. I also raised the issue of the energy program papers as a means of following up on the assessments findings within the Bank. The ensuing question answer session lasted about half an hour.
2. In general the presentation was favorably received by the 30 or so staff at the meeting. It was clear though that most of the staff had only a vague idea of what the programs were about and that their perception of the assessments was colored by memory of the delay on Brazil (Both Mr. Lerdaun and others raised this). Their other concerns related to ensuring adequate regional staff involvement in the preparation of the assessments (I stressed that we welcomed maximum regional input but that frequently input that was previously promised failed to materialize from regional project and programs divisions because of "other priorities."
3. The idea of a systematic program of follow up was well received and the point was made that the assessments ought to be prepared with a view to ensuring that this follow up could take place quickly and effectively. The Energy Program Paper concept was greeted as a good idea but with the caveat that they were all suffering under a resource squeeze.

cc: Messrs. Rovani (o/r)  
 Rao  
 Wackman (o/r)

MA/bjm

## POWER EFFICIENCY AUDIT

### TERMS OF REFERENCE

#### Objective

1. The objective of the audit is to define measures to be taken to implement cost-effective modifications to system facilities, operations, and construction standards to improve the technical efficiency of the power system and to reduce non-technical losses.

#### Scope

2. The audit will include a plant-by-plant survey of generating facilities, sample diagnostic studies of transmission and distribution circuits, a critical analysis of distribution system standards and practices, and a review of customer service activities including metering and billing. In-depth studies of such areas as management and organization, staffing, financial and accounting procedures and tariffs are outside the scope of the audit except to the extent that the audit findings lead to recommendations for further studies or improvements in such areas.

#### Procedures

3. In order to assess the overall efficiency and capability of the entity, a series of short interviews would be held with members of senior management. This would show management's policy towards, and goals for, loss reduction. The information obtained on the principal problems being encountered would indicate where losses were occurring and what steps were taken or were contemplated to reduce losses.

4. The distribution system would be examined through discussions with appropriate staff and site visits to substations, distribution workshops and other facilities. Available statistics on system performance would be analyzed.

5. An assessment of the operating efficiency of thermal generating plants would be made by site visits and inspection of the equipment and through discussions and examination of plant and other records.

6. The information obtained from the above would be analyzed to identify areas where losses could be reduced; or where more detailed study would be justified; and changes or additions should be made to design criteria and operating and maintenance procedures. The course of action to implement these recommendations would be outlined.

#### Reporting

7. The results of the audit will be presented in a concise report. The recommendations will be presented in two phases:



- A. The first phase would be in the form of a short-term Preliminary Loss Reduction Project which would outline immediate steps to be taken to improve the most urgent loss problems in the Transmission, Distribution and Generation Systems. It would cover a two or three year period. The project would be described and given a justification and approximate cost estimate. When required, a Scope of Work or Terms of Reference would be provided to facilitate the contracting of consulting, engineering or other services or the implementation of the activities recommended under the project. This phase would include the following items where appropriate:

Transmission and Distribution

- (1) Design criteria and construction standards.
- (2) System planning methods and procedures.
- (3) System operations and maintenance.
- (4) Service outages and their causes.
- (5) Voltage control and monitoring procedures.
- (6) Economic system load control and management methods.
- (7) Transmission and distribution circuit analysis using computer-based programs and the data base for this analysis.
- (8) Metering systems, operation, maintenance, testing, installations and service standards.
- (9) Meter reading, billing and monitoring procedures.
- (10) Transformer specifications and load management.
- (11) System and circuit power factor measurement and corrective measures.
- (12) System technical loss assessment, value of losses and estimate of loss reduction potential.
- (13) Review of non-technical losses and measures to control them.
- (14) Construction methods, standards, equipment and procedures.

Generation

- (1) The boilers, turbogenerators and auxiliaries would be examined in detail to identify areas of losses or where rehabilitation was needed or where improvements in efficiency could be achieved. The following items would be included where appropriate:
  - (a) The scope for taking advantage of advances in technology by retrofitting more efficient parts in boilers, turbines and auxiliaries such as turbine blades and seals, boiler burners and excess air control.
  - (b) The adequacy and condition of manual and automatic controls.
  - (c) Maintenance programs, procedures and effectiveness and spare parts stocks.
  - (d) Plant operations efficiency.
  - (e) Fuel quality control.
  - (f) The needs for training programs will be assessed for Transmission, Distribution and Generating Systems in as far as this is related to improving efficiency.
- (2) A similar examination where appropriate would be made for hydro electric plants. This would include:
  - (a) Investigation of possible improvement in efficiency by turbine runner replacement.
  - (b) Penstock and trash rack cleaning.

B. The second phase would be in the form of a Long-Term Power Plant and Distribution System Betterment and Expansion Program covering a period of about five years after the Preliminary Project. This would have a general description, an order of magnitude cost estimate and be defined objectively to specify desired results, criteria and approach.

8. The short-term project would be in such form that it would be suitable for presentation for financing by a development bank or similar agency.

Criteria

9. System long-run marginal costs (LRMC) shall be used for valuing efficiency-improvement benefits. These costs shall be expressed in terms of



capacity benefits (\$/kW) and energy benefits (\$/kWh) at each principal voltage level. Costs and benefits shall be further disaggregated according to time-of-day and season when appropriate and feasible. Present-value or life-cycle costing shall be used for all analyses using appropriate opportunity costs (10% for capital unless otherwise specified). Transmission and distribution facilities shall be studied by appropriate sampling techniques using micro-processor computer programs or equivalent methodologies (programmable calculators).

#### Staffing and Work Program

10. The audit shall be performed by experienced engineers applying judgemental analysis. The field study should take two to three weeks which would allow three to four days for each major generating plant survey and two to three weeks for review of transmission and distribution systems. Total effort, including report preparation and travel, should not exceed two months for a system of average size (say, 500 MW). The cooperating entities will provide data, office space, local transportation and counterpart staff for the duration of the survey.

#### Longer Term Benefits

11. Aside from the individual projects which might emerge from this study, there is the longer term benefit of reviewing existing or starting a new, organized, continuing loss reduction program which will keep future losses at acceptable levels and maintain high plant efficiencies.

12. In many cases today, power systems are in poor condition due to past failures to expand the distribution system and to keep up with growing demand or to repeated postponement of maintenance in generating plants. This may have been caused by capital scarcity or other reasons, but as often occurs, the point may have been reached where action can no longer be put off. This type of audit of the system highlights the areas most urgently requiring attention and sets the pattern for the progressive development of a Loss Reduction or Control Program.

## OFFICE MEMORANDUM

*chron*

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

DATE: July 29, 1983

FROM: Masood Ahmed, Acting Division Chief, EGYEA

SUBJECT: ESMP -- Recent Developments and Current Status

1. Welcome Back!
2. The documents in this folder will bring you up-to-date on the Energy Sector Management Program. The main points are summarized below.

Program Developments

A July 20 interim status report lists the current state of program activities. Since June 5, four activity Initiation Reports have been issued. These are:

- (i) Malawi - Tobacco Curing Efficiency Study,
- (ii) Burundi - Petroleum Supply Management,
- (iii) Burundi - Petroleum Exploration and Oil Company Negotiations, and
- (iv) Capco - Institutional Review (copies attached).

Also, during this period, the Kenya Energy Assessment Status Report (new name for Country Status Report) was sent to the government in draft form for their clearance. The PNG EASR was agreed with the government in the field and, after clearance within the Bank, has been issued in final form. Follow up activities are being proposed in both countries. Ansari's report on Institutional Assessment in Sudan was also cleared by government and issued in final (copies are attached).

Power Loss Project

Final versions of the Panama and Zimbabwe reports have been issued. The Sri Lanka report has been reviewed internally and is being finalized. The project itself is being wound up.

We now have a scope of work for the Mark II power loss studies which will be financed out of the ESMP's regular operations. These TOR's have been sent to Kenya and Sudan where the first such studies are planned.

Product Line

The Power Loss Reduction model TOR's also serve as the first of our product line portfolio. Similar documents are under preparation for the institutional analysis of energy ministries and for assistance in petroleum supply management. First drafts will be available next week.



D. C. Rao  
Page 2  
July 29, 1983

Funding and Administrative

A job description has been prepared for Mr. Cox who will take over full time Program Administrator responsibilities in September in UNDP, New York. It is being reviewed by Mashler et al.

My BTO on discussions with CIDA in Ottawa provides a generally positive outlook for their involvement. Work on developing the necessary TOR's to obtain the funds promised for Kenya is now underway.

cc: J. Bharier, EGYEA

MAhmed:lt

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TO: MESSRS. LOOS/DEWAR. INTBAFRAD, NAIROBI.

(AAA) RE ENERGY SECTOR FOLLOW UP. JAVED SHAUKAT WILL HAVE GIVEN YOU COPIES OF LETTERS WHICH HE HANDCARRIED FOR MR. MASAKHELIA AND MR. GECAU ON HIS RECENT MISSION. THESE LETTERS ENCLOSED A COPY OF THE DRAFT ENERGY ASSESSMENT STATUS REPORT PREPARED ON THE BASIS OF KEN NEWCOMBE'S MISSION EARLIER THIS YEAR AND REQUESTED THE GOVERNMENT TO LET US HAVE ANY CHANGES THEY WOULD LIKE MADE TO THE REPORT BEFORE IT WAS FINALIZED. ALSO PROPOSED WAS A PROGRAM OF FOLLOW UP TECHNICAL ASSISTANCE IN THE ENERGY SECTOR WHICH COULD BE FINANCED THROUGH THE JOINT UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM. THE FIRST ITEM OF TECHNICAL ASSISTANCE THAT HAD BEEN SUGGESTED WAS TO CARRY OUT AN EFFICIENCY AUDIT OF THE ELECTRIC POWER SYSTEM WITH A VIEW TO REDUCING LOSSES INCURRED IN THE GENERATION AND DISTRIBUTION STAGES. TERMS OF REFERENCE FOR THIS STUDY WERE ATTACHED FOR GOK APPROVAL AND AN EARLY AUGUST TIMING WAS PROPOSED FOR A MISSION TO CARRY OUT THE FIELDWORK FOR THIS STUDY. (BBB) SO FAR WE HAVE NOT HEARD FROM THE GOVERNMENT ON EITHER THE STATUS REPORT OR THE SPECIFIC POWER EFFICIENCY AUDIT STUDY. I WOULD BE GRATEFUL IF YOU COULD FOLLOW UP WITH MESSRS. GECAU AND MASAKHELIA ON THE LATTER SO THAT WE CAN FIRM UP CONSULTANT COMMITMENTS AND TRAVEL PLANS. GIVEN THE DELAY, EARLY AUGUST

NOT TO BE TRANSMITTED

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TELEX NO.:

DATE:

SUBJECT:

DRAFTED BY:

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DEPARTMENT:

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TO: PORT MORESBY, PAPUA NEW GUINEA. FOR MR. W.

J. MCCANN. (AAA) RE YOUR TELEX OF JULY 22 TO MR. BHARIER. FINAL  
 VERSION OF ENERGY ASSESSMENT STATUS REPORT SENT TO YOU EARLIER  
 THIS WEEK ALONG WITH A LETTER CONFIRMING THAT INSTITUTIONAL  
 REVIEW OF DME AND COGENERATION/AUTOGENERATION STUDIES CAN BE  
 FINANCED THROUGH ENERGY SECTOR MANAGEMENT PROGRAM. (BBB) REGARDING  
 INSTITUTIONAL REVIEW, DR. PRASAD HAS AGREED TO HEAD MISSION TO  
 CARRY OUT THIS ANALYSIS AND WE HAVE PROPOSED THAT THE TEAM ARRIVE  
 IN PORT MORESBY IN FIRST WEEK OF SEPTEMBER FOR UP TO THREE WEEK  
 STAY. IN ADDITION TO DR. PRASAD, MISSION WOULD COMPRISE STAFF  
 ECONOMIST MR. ALLAHADAD AND CONSULTANT PETROLEUM SPECIALIST MR.  
 DUMESTRE. MISSION'S SCOPE OF WORK WOULD BE AS AGREED DURING OUR  
 RECENT MISSION. GRATEFUL FOR YOUR EARLY RESPONSE ON WHETHER THE  
 PROPOSED MISSION TIMING IS CONVENIENT. (CCC) RE AUTOGENERATION  
 STUDY, WE ARE IN THE PROCESS OF IDENTIFYING SUITABLE CANDIDATES  
 AND WILL REVERT TO YOU ON THIS MATTER SHORTLY. IN THE MEANTIME  
 IT WOULD BE USEFUL IF YOU COULD SEND US DRAFT TERMS OF REFERENCE  
 FOR THIS STUDY AND IN PARTICULAR WHETHER YOU WOULD LIKE THE STUDY  
 TO COVER OVERALL ELECTRICITY TARIFFS OR JUST THE TARIFFS/  
 REGULATIONS GOVERNING COGENERATION/AUTOGENERATION. REGARDS, MASOOD  
 AHMED, ENERGY DEPARTMENT, WORLD BANK.

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CLASS OF SERVICE: Telex

TELEX NO.: Geosurv NE23305

DATE: 7/28/83

SUBJECT: PNG: Status Report/Mission

DRAFTED BY: MAHmed:cra

CLEARANCES AND COPY DISTRIBUTION:  
cc: Ms. Farmer, Mr. CorWukes.

AUTHORIZED BY (Name and Signature):

Julian Bharier  
DEPARTMENT:

Energy

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DISTRIBUTION: D.S.

MR BHARIER

*① Mr Bharier*

MR TSANTIS

*② Mr Tsantis*

MR GOLAN

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WORLD BANK 440098

ATTENTION DR JULIAN BHARIER, CHIEF ENERGY ASSESSMENTS DIVISION

ENERGY SECTOR MANAGEMENT PROGRAMME: PAPUA NEW GUINEA

AA PLEASE ADVISE, RPT ADVISE STATUS OF REPORT ON PRASAD/AHMED  
TECHNICAL ASSISTANCE MISSION TO PNG (REF. OUR TELEX OF 17  
JUNE 1983).

BB WOULD BE VERY VALUABLE TO COMMISSION CONSULTANTS(S)  
FOR PROPOSED REVIEW OF ELECTRICITY SECTOR COSTS/TARIFFS/  
COGENERATION/AUTOGENERATION, RPT AUTOGENERATION AS SOON AS POSSIBLE

CC LOOK FORWARD TO YOUR ADVISE.

...REGARDS

W J MCCANN

FAS POLICY AND PLANNING

XXXXXXXXXXXXXXXXXXXX

FOR SECRETARY OF MINERALS AND ENERGY

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REPLY VIA ITT



Chron

## OFFICE MEMORANDUM

To: Mr. Julian Bharier, Chief, EGYEA Date: July 27, 1983

From: Masood Ahmed, EGYEA 

Subject: ESMP - Budget Status

1. The attached documents provide an up-to-date picture of the existing commitments under the Energy Sector Management Program. As shown in Attachment I, the CY83 commitments for the Program as of July 31, 1983 amount to US\$613,840 which is \$173,040 in excess of the funds allocated for this year under the existing UNDP project document. (Budget reproduced in Attachment II). As expected, the bulk of this overrun is on the consultant fees and travel budget for which only a minimal amount had been allocated under the original project document because of the need to get the core advisory and administrative staff for the Program on board. On these latter categories our commitments are broadly in line with the project allocation and are based on the assumption that Mr. Floor will arrive in September and that Tom Cox will assume full time responsibilities for the Assessments/Management work in New York in the same month. The third advisor, Ziad Allahdad, is of course on board already. Attachment III provides details.

2. The main question therefore is how we can meet the expected overrun of \$206,000 on the consultant fees and travel. On the expenditure side, the existing commitments (shown in Attachment IV) have some leeway built into them - the linear programming and conservation work in Bolivia and the energy assessment status report in Indonesia, all of which may slip for a variety of reasons. Their total expected costs are \$75,000. However, against this are the additional commitments that are likely to be made after August 1 for ESMP work in CY83. These include a number of energy assessment status reports (Bangladesh, Haiti, Malawi, Zimbabwe and Mauritius) and any specific technical assistance activities that result therefrom. Even if we proceed slowly with this new work and allowing for some slippage on existing consultants, on balance we are likely to spend at least the \$415,000 estimated for CY83 in Attachment IV.

3. The main adjustment to fill this gap must therefore take place on the revenue side.

4. My preferred strategy would be the following. First we should allocate to the Program the \$350,000 received from the Swedish Government. This will take care of existing commitments and allow for some additional work on preparing energy assessment status reports. However, if, as we discussed, we earmark \$200,000 of this money for David Craig, the balance would see us through on consultant activities for most of CY83 but not all of it. In parallel, therefore, we need to find some additional resources for CY83. The options here are to bring forward some of the consultant money allocated in the existing project document for CY84-85, or to wait until some of the expected contributions into the Program (notably Swiss, Dutch and Canadian) materialize. The latter



would of course be preferable but the choice will be dictated by the pace at which the contributions come in and by the commitments situation under the Assessments budget.

5. A choice does not have to be made immediately if we go ahead with the \$350,000 transfer which will give us four months breathing space (even allowing for Craig). During this period the contribution situation should become much clearer and the resources required for Assessments work in CY84-85 will also be better defined. Thus if you agree I will ask Tom Cox to prepare a revised ESMP project budget which will incorporate the Swedish contribution and make provision for an extra position for David Craig beginning February 1984. The budget revision will also switch some funds across the advisory/administrative/miscellaneous categories to bring those in line with expected disbursements.

6. While the above is a feasible interim solution, it leaves open the question of whether and at what scale the ESMP should continue beyond CY83 if additional funds are not forthcoming.

Attachments.

cc: Messrs. Rao, Wackman (EGY);  
Ms. Owen

MAhmed:aaf.

ESMP Budget Report CY83  
(As of July 31, 1983)

Categories	Budget	Disbursed to Date	Additional Commitments as of July 31, 1983	Total	Balance Available
(in thousands of dollars)					
UNDP Advisers' Travel & Salaries	185,000	10,000	171,000	181,000	4,000
Consultants Travel & Salaries	157,800	51,331	311,549	362,880	(205,080)
Adm. Personnel Costs & Travel	82,000	15,603	54,357	69,960	12,040
Miscellaneous	16,000	0	0	0	16,000
<b>Total</b>	<b>440,800.00</b>	<b>76,934</b>	<b>536,906</b>	<b>613,840</b>	<b>(173,040)</b>

Compiled by MAhmed/GPope:aaf  
July 27, 1983



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 for the ongoing Energy Assessment Program.



# Record Removal Notice

<b>File Title</b> Masood Ahmed - Chronological File - July to December 1983		<b>Barcode No.</b>  1540558		
<b>Document Date</b> 7/25/1983	<b>Document Type</b> Report			
<b>Correspondents / Participants</b>				
<b>Subject / Title</b> Attachment IV ESMP - CY83 Work Program and Dollar Budget				
<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			



**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

July 27, 1983

Mr. N. Agonia  
Permanent Secretary  
Department of Minerals and Energy  
Port Moresby  
Papua New Guinea

Dear Mr. Agonia:

Re: Energy Assessment Status Report

I would like to thank you and your colleagues for the courtesies and help extended to Dr. Prasad and Mr. Ahmed during their recent mission to Papua New Guinea. The mission's report, which was discussed in draft with your colleagues, has now been finalized and I am pleased to attach a copy for your information. Additional copies are being sent via the UNDP pouch to Mr. Subbaraman, the UNDP Resident Representative, and should reach you shortly.

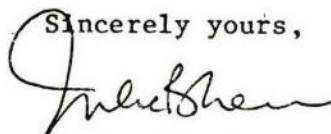
The report notes the many positive actions that have been taken by your Government to address the principal issues identified in the Energy Assessment Report of June 1982. These actions should help to ameliorate Papua New Guinea's energy sector prospects and I would like to complement you on the Government's quick and wide ranging response. At the same time, the mission has identified the urgent need to strengthen the institutional framework for the petroleum and other energy subsectors. I would like to emphasize the importance that the Bank attaches to this question because, in our view, this institutional strengthening will be an essential element in ensuring the efficient and speedy development of Papua New Guinea's substantial energy potential.

The first step in this regard is to carry out a review of the existing institutional framework for the management of the energy sector and to develop recommendations on how this should be strengthened. I understand that the mission discussed this with you and that you have requested that such a review be carried out under the framework of the Joint UNDP/World Bank Energy Sector Management Program. I am pleased to confirm that we can respond positively to your request and further, that Dr. N. B. Prasad has agreed to lead the mission which will carry out the proposed review. The mission will also include a technical specialist in the petroleum sector and an energy planner/economist. Subject to your agreement, we propose that the team begin its work in Port Moresby on September 5 for about three weeks. I would appreciate your early confirmation of the timing of the proposed mission.

Regarding the other study identified by the Energy Assessment Status Report, i.e., a review of the tariffs and regulations governing the cogeneration and auto generation of electricity, I can again confirm that we are able to finance this through the Energy Sector Management Program. However, the staffing and timing of this work are still being defined and we will get back to you with further details on this matter shortly.

In view of their interest in these matters, I am copying this letter to Mr. M. Essex, Ministry of Finance and Mr. Subbaraman, UNDP Resident Representative.

Sincerely yours,



Julian Bharier  
Chief  
Energy Assessment Division  
Energy Department

cc: Messrs. Essex, Ministry of Finance  
Subbaraman, UNDP Resident Representative


bcc and cleared with Ms. Farmer, Ms. Vedavalli, Mr. Cordukes  
bcc: Mr. Cox (UNDP, New York)



## OFFICE MEMORANDUM

TO: Messrs. Dunn (EAI), Erkmen (EAP),  
Iskander (EGY), Segura (IND)

DATE: July 27, 1983

FROM: Masood Ahmed, EGYEA 

SUBJECT: Kenya - Review of CIDA Financed Study on Institutional Assistance to the Ministry of Energy

1. During a recent visit to CIDA headquarters in Ottawa, I was given a copy of the above report which is being considered by CIDA as a basis for a substantial energy technical assistance program to Kenya. CIDA staff asked for the Bank's comments on the study and assured me that these comment would be taken into account in developing their final proposal. I promised to circulate the study to the relevant Bank staff and to send them our consolidated comments by early August.

2. I believe that it is important for the Bank to review and comment on this study for the following reasons:

- (i) the proposed program of assistance is a substantial one (C\$ 9.6 million over 5 years);
- (ii) it is at an early enough stage so that its scope and focus could be altered considerably if we provide good reasons for this;
- (iii) a quick review of the proposal suggests that it is too heavily skewed towards the provision of resident advisors (as opposed to short-term assistance for analyzing specific issues) and to strengthening policy formulation (as opposed to program implementation);
- (iv) the Bank is involved in a wide range of energy activities in Kenya--geothermal, electric power, petroleum, etc.; CIDA's program, if it is put into place, will have a bearing on our projects and on the energy aspects of SAL;
- (v) the recently completed energy assessment status report provides us with an up-to-date review of energy sector developments and the priorities for technical assistance in Kenya.

3. Given these factors, I would appreciate it if you could ask the staff concerned in your division to review the attached study at their earliest convenience. I will organize a meeting towards the end of next week to obtain preliminary comments. Please let me know who will be attending from your division so that I can fix a mutually convenient time.

cc and cleared with Mr. Julian Bharier  
cc: Messrs. Rao (o/r), Wackman, Newcombe

*Mr. M. Ahmed  
Chron*

le 26 juillet 1983

Son Excellence Monsieur le Ministre  
du Développement Industriel et de l'Artisanat  
Ministère du Développement  
Industriel et de l'Artisanat  
Dakar, Sénégal

OBJET: SENEGAL: Etude Sectorielle Sur l'Energie,  
version finale

Monsieur le Ministre,

J'ai l'honneur de vous transmettre ci-joint un exemplaire de la version finale de l'étude sur l'ensemble du secteur de l'énergie au Sénégal. Puisque ce rapport se base sur les données disponibles en juin 1982, il représente la situation à ce moment-là, mais il a été mis à jour pour tenir compte de plusieurs développements, notamment d'ordre institutionnel, qui se sont produits pendant la période de juin 1982 en mai 1983, date des discussions de la version préliminaire du rapport entre les autorités sénégalaises et la mission de suivi de Messieurs Chadenet et Ahmed. Cette version finale comprend donc les modifications convenues au cours de ces discussions.

S'agissant d'action de suivi à cette étude, comme nous l'avons indiqué au cours de réunions de mai, la démarche la plus opportune serait la préparation par la Direction de l'Energie du Ministère du Développement Industriel et de l'Artisanat, avec l'aide des deux conseillers auprès de ce Ministère déjà financés par la Banque, d'un plan détaillé, y compris les coûts, d'un projet d'assistance technique au secteur de l'énergie. Comme nous en avons convenu en mai, cette assistance devrait se concentrer sur les économies d'énergie et le renforcement des capacités de la Direction de l'Energie. Une fois que la Direction de l'Energie aura discuté un tel plan avec les organismes gouvernementaux sénégalais concernés et que ces derniers l'auront approuvé, la Banque se tient prête soit à le considérer pour un financement à titre de don dans le cadre du Programme conjoint PNUD/Banque mondiale pour favoriser la gestion du secteur de l'énergie, soit à chercher un autre moyen pour le financer. Nous attendons donc avec intérêt une proposition de votre part au sujet de ce projet d'assistance technique.



Son Excellence le Ministre  
du Développement Industriel et de l'Artisanat

le 26 juillet

Nous avons aussi envoyé cent exemplaires de cette version finale du rapport sur le secteur énergétique au Sénégal à M. Benjamin, le représentant résident de la Banque à Dakar. Ces exemplaires sont à votre disposition pour distribuer aux organismes tels que la SENELEC et la SAR qui ont participé à l'étude, et nous sommes prêts à vous en fournir d'autres s'il y en a besoin.

Veillez agréer, Monsieur le Ministre, l'expression de ma haute considération.



Paul M. Cadario  
Chef de Division p.i.  
Département des Programmes II  
Région Afrique de l'Ouest

copie:

Son Excellence Monsieur le Ministre du Plan  
Son Excellence Monsieur le Ministre des Finances  
M. Benjamin, Représentant résident de la Banque mondiale à Dakar  
B. Borna, représentant résident du PNUD à Dakar

Cleared with and cc: Noel King, EGYEA

cc: P. de Raet, Masood Ahmed

PMC:sa

**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

July 26, 1983

Mr. A. J. Lambert  
913 Allendale Ct., S.W.  
Blacksburg, VA 24060

Dear Mr. Lambert:

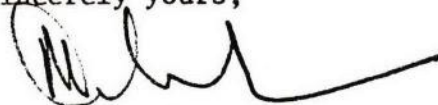
Re: Malawi - Tobacco Curing Energy Efficiency Study

Attached are two copies of the typed version of your first draft of the above report. Please make any changes you feel are required to this draft and send it back to me so that I can have them incorporated in a version for review by my colleagues and myself. You will then probably have to come to Washington for 2 - 3 days to discuss that draft and to finalize it in the light of comments received.

I am also sending a copy of this draft to Mr. Keene at Devres, Inc. for his information and review.

I look forward to hearing from you.

Sincerely yours,



Masood Ahmed  
Energy Assessments Division  
Energy Department



WORLD BANK OUTGOING MESSAGE FORM Telegram, Cable, Telex

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TO:

BOOK OF TWO:  
MR. J. SHAUKAT  
INTBAFRAD 970-215  
KHARTUM, SUDAN  
  
HILTON HOTEL KHARTUM, SUDAN  
MR. J. SHAUKAT, WORLD BANK GUEST

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DRAFTED BY:

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

DEPARTMENT:

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Chron

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TO: UNDP, ZAMBIA. FOR CHENG. RE YOUR TELEX OF JULY 20 TO BHARIER/ODUOLOWU. PREPARATION OF TECHNICAL ASSISTANCE PACKAGE FOR INSTITUTIONAL STRENGTHENING OF NEC IS BEING HELD UP BY (1) DELAY IN DISTRIBUTING ENERGY ASSESSMENT REPORT TO VARIOUS AGENCIES UNTIL THE REPORT HAS BEEN FORMALLY PRESENTED TO CABINET BY MPTC AND (2) INADEQUATE DEFINITION OF RELATIVE RESPONSIBILITIES AND FUNCTIONS OF NEC AND MPTC IN THE AREA OF ENERGY POLICY FORMULATION AND IMPLEMENTATION. (PARA.) ODUOLOWU DISCUSSED THESE ISSUES WITH GOZ OFFICIALS IN LUSAKA DURING JUNE VISIT AND AGREED WITH THEM THAT NEC AND MPTC WOULD JOINTLY PREPARE A PROPOSAL FOR TECHNICAL ASSISTANCE WHICH THEY WOULD SEND TO THE BANK IN JUNE/JULY. ALSO AGREED THAT BLUE COVER ASSESSMENT WOULD BE DISTRIBUTED TO ALL CONCERNED AGENCIES IMMEDIATELY. HAVE NOT HEARD FURTHER ON EITHER MATTER AND WOULD BE GRATEFUL IF YOU COULD FOLLOW-UP AND INFORM US OF CURRENT STATUS. REGARDS, AHMED, ENERGY DEPARTMENT, WORLD BANK.

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CLASS OF SERVICE: <b>TELEX</b>		TELEX NO.:	DATE: <b>8222/83</b>
SUBJECT: <b>ZAMBIA: ESMP FOLLOW-UP</b>		DRAFTED BY: <b>MAHmed:cra</b>	
CLEARANCES AND COPY DISTRIBUTION:		AUTHORIZED BY (Name and Signature): <b>Julian Bharier</b>	
CC: Messrs. Messenger (EAL); Bharier (EGY)		DEPARTMENT: <b>Energy Department</b>	
CC: Messrs. Acouris/Mashler (UNDP, N.Y.)		SECTION BELOW FOR USE OF CABLE SECTION	
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PAGE 1 OF 3 EXTENSION 74545

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TO: EXPORT COUNCIL OF NORWAY, DRAMMENSVEIEN 40,

OSLO 2, NORWAY. FOR MESSRS. SCHISTAD AND GANNESTAD. THANK YOU AGAIN FOR YOUR COOPERATION AND COLLABORATION WHEN I WAS IN NORWAY. YOU WILL RECALL THAT WE DISCUSSED THE POSSIBILITY THAT SOME FINANCE FROM YOUR TECHNICAL ASSISTANCE FUND MIGHT BE PROVIDED IN THE COMING YEARS FOR A PROJECT AIMED AT REFINING AND DEVELOPING TO THE DEMONSTRATION STAGE TECHNIQUES FOR STANDARDIZING AND PACKAGING SMALL HYDRO-POWER SYSTEMS (I.E. 50-1000 KW). THIS PROJECT WOULD DRAW ON WORK IN THIS FIELD ALREADY COMMISSIONED BY THE BANK AS PART OF OUR ENERGY RESEARCH PROGRAM. THIS RESEARCH WAS PROMPTED BY OUR CONCERN THAT A PROGRAM APPROACH TO SMALL HYDRO DEVELOPMENT WAS NECESSARY TO OVERCOME THE COST AND TIME CONSTRAINTS INHERENT IN THE PRESENT SITE-SPECIFIC PROJECT-BY-PROJECT ANALYSIS. ACCORDINGLY THIS RESEARCH DEVELOPED A METHODOLOGY USING SAMPLING AND STATISTICAL TECHNIQUES TO IDENTIFY THE INITIAL SUB-PROJECTS IN A PROGRAM OF SMALL HYDRO DEVELOPMENT. FINAL REPORT PRESENTING THIS METHODOLOGY IS NOW IN PREPARATION AND SHOULD BE AVAILABLE IN SEPTEMBER. (PARAGRAPH) OBJECTIVE OF THE PROPOSED PROJECT WOULD BE TO TEST THIS METHODOLOGY IN THREE FIELD STUDIES IN FIRST STAGE, AND IF SUCCESSFUL PROCEED WITH PROJECT PREPARATION WORK IN SECOND

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STAGE TO IDENTIFY INITIAL PROJECTS AND PREPARE ESTIMATES OF COSTS AND BENEFITS OF PROPOSED DEVELOPMENT PROGRAMS WHICH COULD THEN BE PRESENTED FOR FUNDING TO A DEVELOPMENT FINANCING INSTITUTION LIKE WORLD BANK. (PARAGRAPH) THE FIRST STAGE, ESTIMATED TO COST 300 THOUSAND US DOLLARS WOULD TEST THIS APPROACH IN ONE EACH OF THE FOLLOWING THREE CATEGORIES. (AAA) COUNTRIES WITH POTENTIAL FOR DEVELOPING NEW PROSPECTS IN REMOTE AREAS WITH NO CIVIL WORKS CURRENTLY AT THE RELEVANT SITES (BBB) COUNTRIES WHICH ALREADY HAVE WATERWHEELS BUT WHICH NEED UPGRADING TO INCREASE POWER OUTPUT (CCC) COUNTRIES WHICH HAVE EXISTING IRRIGATION NETWORKS WHICH COULD BE DEVELOPED INTO HYDRO-POWER SITES USING SIMPLE DESIGN AND CONSTRUCTION TECHNIQUES. THE SECOND STAGE OF THE PROJECT, ESTIMATED TO COST 900 THOUSAND US DOLLARS, WOULD CONSIST OF PREPARING DETAILED FEASIBILITY STUDIES IN UP TO THREE COUNTRIES FOR AN INVESTMENT PROJECT THAT WOULD BE LARGE ENOUGH TO ATTRACT TRADITIONAL FINANCING AGENCIES. THE PROJECT WOULD BE MANAGED UNDER THE JOINT UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM. WE COULD MAKE EXTENSIVE USE OF NORWEGIAN CONSULTANTS IN THE EXECUTION OF THIS PROJECT. (PARAGRAPH) I HOPE YOU WILL GIVE CAREFUL CONSIDERATION TO THIS PROJECT AND THAT YOU WILL LET ME KNOW IF

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FURTHER INFORMATION IS REQUIRED. BEST WISHES, JULIAN BHARIER,  
ENERGY DEPARTMENT, WORLD BANK.

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7/21/83

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Mtg w/Norwegians re Funding

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cc: Messrs. Fish, Wackman  
cc: Mr. Svedman (EDS)

DRAFTED BY:

Mahmed/JBharier

AUTHORIZED BY (Name and Signature):

Julian Bharier

DEPARTMENT:

ENERGY

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## OFFICE MEMORANDUM

TO: Mr. K. Sarwar Lateef, Resident Representative DATE: July 21, 1983  
Colombo

FROM: Masood Ahmed, Energy Assessments Division, Energy Department

SUBJECT: Sri Lanka: Follow-up to Energy Assessment Report

1. Subsequent to our recent discussions, I would like to seek your advice on how we can best proceed with defining a program of follow up to the energy assessment report which was finalized in May 1982.

2. As I mentioned to you in Washington, the approach that we are generally following in countries where assessments were completed 12 or more months ago, is to prepare a brief Energy Assessment Status Report on the basis of information available in the Bank supplemented by a short mission. These reports set out the main developments in the energy sector since the preparation of the assessment and identify what progress has been made in implementing the major recommendations of the assessment. They also describe ongoing or planned technical assistance activities in energy by external agencies. On the basis of this, the status reports draw up a list of priority areas where additional technical assistance is required in the energy sector. I am attaching a copy of the Energy Assessment Status Report for Papua New Guinea which will give you a better notion of the scope and focus of these reports.

4. Apart from their usefulness to the Governments and the donor agencies in general, the preparation of these status reports is particularly opportune because they provide a framework for the grant-based technical assistance that we are now able to offer under the Joint World Bank/UNDP Energy Sector Management Program. While there are still only limited resources available for the program, some of these could well be used to follow up on urgent energy issues in Sri Lanka. A copy of a brochure describing the operation of the Energy Sector Management Program is attached.

5. If you agree with this approach, would you raise it with the appropriate officials in the Government and let me know whether/when such a mission would be convenient. Our own preference would be for a two-week mission in August (Mr. Ansari alone) or in September (when I could also join Mr. Ansari for part of the time).

Many thanks for you help.

*Best regards,  
Masood*

cc and cleared with Mr. F. Ahmed (ASA)  
cc: Messrs. Bharier, Wackman, Ansari (EGY)



# Joint UNDP/World Bank Energy Sector Management Program

Activity Completion Report

No. 006/83

**DECLASSIFIED**

NOV 30 2022

**WBG ARCHIVES**

Country: PAPUA NEW GUINEA

Activity: ENERGY ASSESSMENT STATUS REPORT

July 1983



## Energy Sector Management Program

The Joint UNDP/World Bank Energy Sector Management Program is 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 produced under another Joint UNDP/World Bank Program, or in carrying out prefeasibility studies for energy investments identified in these reports.

The Energy Sector Management Program can provide the following types of assistance for countries which have had assessments:

- ° assistance to improve a government's ability to manage its energy sector, for example by defining staffing and work programs, evaluating management information needs, identifying sources of public and private finance, developing a medium-term investment plan;
- ° prefeasibility work on priority investment plans, especially those which will improve the efficiency of energy use, bring about economic fuel substitution, or provide enough affordable energy to rural areas;
- ° specific short-term assistance in institutional and manpower development, both at the sectoral and agency levels.

The program aims to supplement, advance and strengthen the impact of bilateral or multilateral resources already available for technical assistance in the energy sector.

### Funding of the Program

The Energy Sector Management Program is designed to be a major international effort. The Program has been initiated with core financing from the UNDP and the World Bank. Important financial contributions have also been made by the Governments of Australia, Denmark, Finland, Netherlands, New Zealand, Sweden and United Kingdom. Further resources are being sought from major donor agencies in order to realize the full potential of the Program to respond to the urgent needs of the developing countries for this type of assistance.

PAPUA NEW GUINEA

ENERGY ASSESSMENT STATUS REPORT

July 1983



## PAPUA NEW GUINEA

### ENERGY ASSESSMENT STATUS REPORT 1/

#### I. BACKGROUND AND SUMMARY

1.01 Papua New Guinea imports virtually all of its commercial energy in the form of petroleum products even though it has a diverse and potentially very large indigenous energy resource base. This paradox is due to two factors. First, the indigenous energy resources have not been adequately defined; and second, the small and fragmented nature of domestic energy markets makes the economic development of these resources additionally complicated. The principal focus of the energy assessment mission which visited PNG in November 1981 was to help define a strategy to overcome these difficulties. The two main strands of this strategy as recommended in the mission's report 2/ were:

- (i) to accelerate the identification and development of PNG's petroleum potential for domestic markets and/or for export; and
- (ii) to analyze the various options for electric power generation and thus to put into place a revised power supply system which would result in a cheaper and more reliable supply of electricity.

1.02 The report also made a number of other recommendations including the rationalization of the previously excessively large and diverse program to develop nonconventional, renewable energy sources, and the strengthening of the institutional framework for the energy sector to enable the Government to effectively address the above issues.

1.03 The Government's response to the issues identified by the energy assessment report has been remarkably quick and wide ranging. Work has begun on most of the studies and further analysis required to define a strategy for petroleum development and utilization and for the preparation of a least cost power development plan. The renewable energy development program has been further scaled down and reoriented to technologies which are likely to have earlier and more certain payoffs for the country. However, on the institutional question while progress has been made on strengthening the policy and technical capability at the sectoral level, its pace has been slow and further action is urgently required. This is particularly so in the petroleum sector, where the existing institutional structure and staffing will soon become inadequate

1/ This report was prepared by a mission comprising Messrs. M. Ahmed and N. B. Prasad which visited Papua New Guinea in June 1983.

2/ Papua New Guinea: Issues and Options in the Energy Sector, June 1982. Report of the Joint UNDP/World Bank Energy Assessment Programme.



to cope with an increasing level of private exploration and development activity. Support for institutional strengthening should therefore be a high priority in the future technical assistance programs of donor agencies. In parallel, the Government will also need to make a substantial reallocation of its own staff resources to the energy sector and to revise and streamline the existing institutional arrangement for the management of this sector.

## II. ENERGY SECTOR DEVELOPMENTS, NOVEMBER 1981 - JUNE 1983

2.01 The major developments in the energy sector since the November 1981 assessment mission are summarized below. On the demand side, the consumption of both petroleum products and electricity stagnated in 1982, partly because GDP fell by an estimated 1% and partly because of the sharp rise in electricity tariffs in January 1982. Total petroleum product consumption in 1982 is estimated at 644 ktoe (1981: 675 ktoe) and total electricity generation in the public system was 442 GWH (1981: 460 GWH). Because of continued poor rainfall thermal generation accounted for 36% of total generation (the same as in 1981). The oil import bill in 1982 (K147 million) was also the same as in 1981. Despite the fall in crude oil prices, 1983 oil imports will not cost significantly less because of the devaluation of the Kina in March 1983 (about 10% against the US dollar). After increases of 70% in the period November 1980 - December 1981, electricity tariffs remained constant upto May 1983. In June 1983 the tariff structure was revised to provide a uniform national tariff of 16.0 toea/KWH (average sales price in 1982 was about 13 toea/KWH). The new tariff structure results in a serious disparity between costs and tariffs for the various independent supply grids because the costs of power supply in these grids are very different.

2.02 On the supply sides, the main developments have been in the petroleum sector. There has been an increase in exploration interest with Shell/Amoco applying for a license in the North New Guinea basin and some smaller companies applying for licenses in the Gulf area (south of Pasca) and in areas adjoining the Barikewa concession. Some preliminary seismic and geochemical work has also been undertaken in the Cape Vogel basin. There has been a gas and condensate discovery by Gulf oil at Juha in the Southern Highlands. The potential of this deposit (initial flows 8.3 MMCFD of gas and 580 barrels/day of condensate) is being investigated. An important negative development has been the blowout of the second Pasca well in February 1983, which has still not been stemmed. The inadequate and slow response in dealing with the blowout problem has highlighted the urgent need to streamline and strengthen the Government's capability for managing petroleum exploration and development. This is reinforced by the need to formulate quickly a comprehensive strategy for the utilization of proven gas resources.



2.03 In the other energy subsectors, important developments include the commissioning of a second 20MW gas turbine in the Port Moresby system. The Ramu ethanol project is progressing according to schedule and agreements have been reached with the oil companies to market a 20% ethanol blend gasoline in the Lae area when production starts later this year. Finally, as discussed in Section IV below, considerable progress has been made in identifying and realizing the potential for improved energy efficiency in the industrial and commercial sectors.

### III. ON-GOING TECHNICAL ASSISTANCE ACTIVITIES

- (i) The World Bank: Assistance is being provided under a Petroleum Exploration Technical Assistance Project (cofinanced with the OPEC Fund) to strengthen the monitoring and promotion capability in the petroleum sector. In addition, the Bank has been closely involved with the broader follow-up to the energy assessment. A July 1982 mission assisted in the preparation of terms of reference for a variety of coal and power subsector studies which have since been started. Subsequently, a March 1983 mission reviewed and commented upon the drafts of many of these studies and proposed additional work required to complete them. The Bank's regional projects staff continue to be involved in the final stages of this work.
- (ii) The New Zealand Government is funding the foreign exchange costs (about K150,000 over 1 year) for a mini-hydro resource inventory; this may be renewed for another year.
- (iii) A number of regional assistance programs may provide financing for small renewable energy and conservation projects. These include the EEC (administered by the South Pacific Bureau for Economic Cooperation), UNDP's Pacific energy program, and Commonwealth Heads of Government Regional Meeting Special Energy Funds; and bilateral assistance from the Australian and New Zealand Governments.

### IV. STATUS OF ENERGY ASSESSMENT RECOMMENDATIONS

#### Petroleum

- (i) Induce oil companies to accelerate their exploration activities to firm up reserves and reach agreement on the development of discovered gas fields. Work programs proposed for new licenses and for renewal of existing licenses are being reviewed to this end by Petroleum Resources Assessment Group (PRAG) and its consultants. Recent onshore find at Juha (gas/condensate) being evaluated. See below for development activities.

- (ii) Carry out utilization studies on onshore/offshore gas fields

Pasca: Consultant prefeasibility study of field development completed April 1983; utilization study for petro-chemicals completed April 1983; suggests production of ammonia-urea onshore as most promising but still marginal prospect; private study on barged transport of pressurized LNG to Bougainville Copper Mines received May 1983 and being reviewed; however all further work on hold because of well blowout.

Barikewa: Desk study by Elcom on using this deposit for power supply to Ramu grid is being reviewed by Government and may need to be reworked using more recent information on costs and reserve potential provided by consultant studies financed through the Petroleum Exploration Technical Assistance Project. In particular feasibility of using slim hole drilling to reduce cost needs to be considered.

#### Electric Power

- (iii) Analyze options for Ramu and Port Moresby grids and prepare least cost power development program

The following studies have been completed by consultants employed by Elcom:

- a) Port Moresby 25MW coal fired station costing study (March 1983).
- b) Port Moresby System - Investigation of hydro power alternatives (interim report, December 1982).
- c) Ramu System - Investigation of Hydro power alternatives (interim report, January 1983)
- d) Barikewa Gas - preliminary assessment (in house Elcom Study, February 1983).



These studies are now being reviewed by the Bank and by Elcom's resident consultants who will also prepare a least cost development program for the power system. This analysis will also take into account the utilization of large size slow/medium speed diesel and of interconnecting the Ramu/Port Moresby systems.

(iv) Compile an inventory of major hydro sites and introduce gauging stations on small hydro sites for which there are no flow records.

Work has begun with financial assistance of the Bank. About 60 sites of 30 MW or more will be covered in a two year inventory; gauging network is expanding but shortage of counter part funds is slowing down both efforts.

(v) Investigate use of wood and wood wastes for power generation.

Economic potential for using wood waste for supply to Elcom grid appears smaller than initially envisaged; evaluation of smaller sized plants (direct burning and gasifiers) being done to supply rural industry.

(vi) Analyze economics of shifting Bougainville copper mines power generation from oil to coal.

No decision has been reached on Bougainville's future energy supply mix because the costs and feasibility of generating electricity from Laluai hydro scheme and Pasca gas (LNG/LPG) are still being evaluated.

(vii) Carefully analyze economics of Rouna 4 project before embarking on it.

Further Government analysis of this project continues in view of potential bilateral concessionary financing that is tied to it.

#### Coal

(viii) Analyze commercial viability of developing Purari coal deposit.

In-house study carried out by Geological Survey in early 1983 indicates that such development would not be commercially viable at this time.

Conservation

No specific recommendation.

Energy audits completed on 4 hotels, a hospital, a brewery and several other sites. Savings of 20-50% on energy bills identified in most cases; partial or complete implementation of recommendations proceeding (payback periods 0-3 years). Demonstration projects on lighting, air conditioning and waste heat recovery commencing in public sector.

Cogeneration

No specific recommendations.

Highly economic private sector cogeneration applications identified in breweries, other industries and hotels. Investment may not proceed because of uncertainty over Elcom standby tariffs. This question needs to be analyzed urgently to permit economic cogeneration to proceed.

Renewables

(ix) Restrict investment in ethanol to the Ramu project and evaluate critically all other proposals.

Ramu project is nearing completion. Baiyer River project has been cancelled. No other ethanol projects are planned.

(x) Halt or reduce investments in biogas, pyrolysis and photovoltaic experimental projects.

No further investments made in biogas and pyrolysis; photovoltaic investments are being limited to proven applications and to demonstration projects where tied aid is involved. A significant program for the demonstration of power gasification is envisaged with EEC support.

(xi) Continue to support solar water heaters in the residential/commercial sectors.

Solar water heaters continue to flourish. The current installed number is about 7,500 of which 90% are in residences.



## Institutions

(xii) Strengthen the institutional capability for dealing with the oil and gas sector and consider the eventual establishment of a separate oil and gas agency.

Some progress has been made through the establishment of PRAG and the assistance provided by the Bank assisted Petroleum Exploraton Technical Assistance Project. The institutional structure and staffing in this area need to be reviewed (see Section V below).

(xiii) Reorient work of Energy Planning Unit to focus on all energy sources and create a separate unit for the implementation of renewable energy and conservation measures.

Given the cutback in the renewable energy program the Government has decided not to create a separate unit for this area. The mission agrees that this is not a high priority now. EPU's focus is also being broadened to cover conventional energy sources, including petroleum. Energy demand forecasts and alternative supply scenarios have been prepared. However, as noted below, EPU's staffing needs to be considerably strengthened to enable it to discharge those broader responsibilities effectively.

## V. PRIORITIES FOR TECHNICAL ASSISTANCE

### (1) Institutional Review of Energy Planning

5.01 The two most important components of the energy sector in PNG are petroleum and power. The most significant development noted by the mission since the publication of the Assessment Report has been the acceleration of activity in the petroleum subsector. This acceleration has put increased strain on the three Divisions of DME involved in the petroleum sector (viz. Mines, Policy and Planning, and Geological Survey) and has highlighted the difficulties of coordination between those Divisions. These difficulties also extend to the interface between DME and the Electricity Commission on the evaluation of various options for the use of indigenous gas reserves (Barikewa, Pasca and most recently Juha) for power generation.

5.02 It has been agreed by the Secretary of DME that a comprehensive review of institutional responsibilities and capabilities in the energy sector is now urgently required to avoid the prospect of DME itself



becoming a bottleneck on the near-term development of PNG's petroleum resources both for export and for domestic use. This review would encompass all relevant Divisions of DME, their interrelationship, as well as their relationship with other energy agencies such as the Electricity Commission. In the petroleum subsector the focal point of the review would be the Petroleum Advisory Board, chaired by the Secretary of DME. This review would define the respective responsibilities of the various parts of the DME in the area of energy sector management and planning. It would also identify the staffing and technical assistance that would be needed to help DME carry out these tasks effectively. The review would also define the training required to ensure progressive build-up of an indigenous energy planning capability within PNG.

5.03 The Government has requested, and the mission strongly supports, that such a review be carried out urgently under the Energy Sector Management Program. The required input is estimated at two to three man-months.

(ii) Co-generation and Auto-generation

5.04 At the time of the Assessment Report it was felt that the Government's policy on energy pricing had resulted in a broadly appropriate structure of incentives for energy production and consumption. The mission notes that a system of uniform national tariffs for electricity has since replaced the previous cost-based structure and, as a result, a number of fuel substitution anomalies have recently arisen. In particular, the present combination of electricity tariffs and standby charges appears to be preventing the development of a number of economic options for cogeneration and auto-generation in the private sector.

5.05 To resolve these issues, and to promote a balanced development of private and public sector least-cost energy supply options for both heat and power, a study is required of the structure of tariffs and regulations governing cogeneration. This study would be based on a review of time-pattern of production costs in each of the Electricity Commission's supply grids.

5.06 Again, the Government has requested and the mission proposes that this study be funded under the Energy Sector Management Program, with the required input estimated at 6 - 8 staff weeks.

(iii) Information Base for Energy Planning

5.07 The mission notes that considerable effort has been made recently to fill in gaps in the energy data base and to exploit this information for systematic planning of medium-term energy options. This activity now appears to be constrained by a shortage of suitably-trained staff and by the limitations of manual data processing.



5.08 It was agreed that the institutional review (in (i) above) could usefully define how these needs could be met through a range of data processing options (both hardware and software components). ESMP funding for implementing these options is not envisaged but some funds may be required to assist the PNG Government to find a suitable source of funding.





## OFFICE MEMORANDUM

TO: Distribution

DATE: July 20, 1983

FROM: Masood Ahmed, EGYEA SUBJECT: Energy Sector Management Program - Activity Initiation Report:  
Central African Power Corporation (CAPCO): Review of Future  
Role and Functions

1. The Governments of Zambia and Zimbabwe have requested the Bank to assist in a proposed review of the future role and functions of CAPCO, in which both countries have an interest. The review will be carried out by a nine member bilateral commission comprising four representatives from each country and an outside Chairman. The commission will also need to draw upon the services of specialized technical consultants for its work. Preliminary indications are that three technical experts will be required for 4 - 6 months each to assist in the engineering, economics and legal/institutional aspects of the proposed review. This is an important institutional issue in the energy sectors of both countries and was discussed in the respective energy assessment reports. 1/
2. The Bank has responded to this request by identifying and nominating the Chairman (Mr. P. Damry) for the joint commission and by agreeing to finance through the ESMP, a reconnaissance mission by Mr. Damry to Zambia and Zimbabwe. The estimated cost of the reconnaissance phase is \$15,000.
3. The objective of this reconnaissance phase is to define more clearly the scope of work for the proposed commission and to determine the specific technical assistance that will be required. Some of this assistance may be provided by other donor agencies, once the reconnaissance mission has developed a more detailed justification of the work and a better estimate of the required inputs.
4. The attached documents provide further information on this exercise. The reconnaissance phase will be jointly supervised by ESMP and Programs staff. Please direct any questions or comments on this matter to Mr. G. Gebhart (x72579) or to myself.

Distribution: Messrs. Wapenhans (o/r), Kraske, Wyss, Bronfman, Rigo, Ofosu-Amaah, Erkmen, Nkojo (o/r), Rovani, Rao, Sheehan, Bharier, Sadove, Bourcier, Fish, Iskander, Sanders, Heron, Wackman and Ms. Bracher

1/ Zambia - Issues and Options in the Energy Sector, January 1983  
Zimbabwe - Issues and Options in the Energy Sector, June 1982

## OFFICE MEMORANDUM

TO: Mr. Purvis Damry, Consultant

DATE: July 21, 1983

FROM: Harold Messenger, <sup>For G.M.G.</sup> Division Chief, EALDBSUBJECT: CAPCO - Institutional Review: Reconnaissance Mission  
Terms of Reference

1. You will arrive in Lusaka, Zambia on or about August 10, 1983 for a stay of about two weeks. The purpose of your visit is to prepare for the review of CAPCO's future, which is to be carried out by a Group of Experts under your chairmanship (see attached note). Your initial meeting should be with Mr. E.S.S. Nebwe, Secretary, Higher Authority for Power, who will prepare an itinerary for your visit, brief you on the issues to be covered by the review, and introduce you to the other members of the Group of Experts. You should travel to Harare, Zimbabwe and to other places in Zambia and Zimbabwe as you deem necessary to complete your work.

2. In preparing for the full review, which should take place as soon as possible after this initial visit, you should focus on the following specific tasks:

- (a) definition of the scope of work for the review;
- (b) determination of additional technical assistance required;
- (c) formulation of an action program to carry out the review, including a timetable and specific task assignments; and
- (d) estimation of the cost of the review.

3. You will obtain agreement with the Higher Authority for Power on a program of action to carry out the review as outlined in 2. above.

4. Upon completion of your field assignment, you will prepare and submit to the Bank a brief report on your mission, including the agreed action program and your recommendations as to further Bank involvement in the review. You will visit Washington for a period of approximately one week to discuss and finalize your report and to brief Bank staff on your findings and recommendations.

Cleared with and cc: Mr. M. Ahmed

cc: Messrs. Wapenhans (o/r), Kraske, Wyss, Bronfman, Erkmen, Fish, Rigo, Ofosu-Amaah, Bharier, Sheehan, Nkojo (o/r), and Ms. Bracher

GGebhart:efs



CENTRAL AFRICAN POWER CORPORATION (CAPCO)

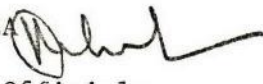
Group of Experts to Review Future  
Under Chairman Nominated by World Bank

1. The World Bank has agreed to a request from the Higher Authority for Power, the governing body for the Central African Power Corporation (CAPCO), to nominate the chairman of a group of experts to review the future of CAPCO in relation to the interests of Zambia and Zimbabwe.
2. CAPCO was established by the two countries in 1963 to be responsible for joint hydro-power development on the Zambesi River. Several major joint hydro-power investments were subsequently undertaken under CAPCO's auspices.
3. Because of political developments in Rhodesia after the Unilateral Declaration of Independence, Zambia undertook to develop some of its hydro resources outside the CAPCO framework. Now, both the Zambian and Zimbabwean governments wish to review the arrangements for joint development of their hydro-power resources and CAPCO's role in this context. A revival or expansion of CAPCO's coordinating function would necessarily involve resolution of several difficult issues, e.g., the sharing of past and future investment costs and power tariff policy.
4. CAPCO has been assisted since its inception by technical assistance from the World Bank, which also made two loans for the Kariba hydropower complex developed under CAPCO's authority. In addition, the Governments of Zambia and Zimbabwe have often called upon the Bank to assist in resolving legal and technical issues that have arisen in connection with CAPCO's operations. While the exact form future hydro-power development in the area will take is at present undefined, the Bank would be prepared to consider further assistance to such development, particularly in the context of regional cooperation in general and of joint Zambian-Zimbabwean development in particular.
5. The proposed review of CAPCO's future will be directed by its governing body, the Higher Authority for Power, which consists of representatives of both governments. The panel of eight experts to be chosen for carrying out the review will be drawn equally from Zambia and Zimbabwe, with the addition of an independent chairman. The latter will be appointed by the Higher Authority, which has agreed to the World Bank's nomination of Mr. Purviz Damry, an Indian national with wide experience in inter-governmental mediation who is a former Vice-President and Secretary of the World Bank.
6. The Authority has agreed to finance the appointment of the chairman while the World Bank would seek finance for technical specialists (probably two or three) who are likely to be required to assist the group of local experts.
7. To establish the scope and duration of the review, draft and discuss terms of reference and determine the specific technical help required, the proposed chairman will shortly carry out a reconnaissance to Zambia and Zimbabwe, to be financed by the ongoing UNDP/World Bank energy management program.



## OFFICE MEMORANDUM

TO: Mr. Julian Bharier, Chief, EGYEA      DATE: July 19, 1983

FROM: Masood Ahmed, EGYEA 

SUBJECT: Meeting with CIDA Officials

1. I spent July 15 in Ottawa discussing prospects for ESMP collaboration with the relevant CIDA officials (see attached list). The results are summarized below.

Senegal

2. I briefed Pierre David (Country Manager), Lise Groleau (Energy Projects Officer) and Kenneth Cook (visiting First Secretary from the Dakar Embassy) on the principal findings of the Senegal Assessment and gave them a copy of the blue cover. They are very keen to participate in the follow up to this report and have put all new energy assistance on hold until they can review the assessment. We discussed in particular the possibility of a joint Bank/CIDA initiative in developing an effective energy conservation program along the lines identified in the assessment and in response to the Government's request to the assessment discussion mission for assistance in this area. They reacted positively in principle but would like to come back on specific modalities after reading the report. I agreed to keep them briefed on any further developments at our end. They also said that they would reexamine the need for yet another general energy advisor, which they had previously agreed to send to Senegal but regarding which the assessment had raised some concerns relating to duplication of work with existing advisors and the relative merits of providing a specialist in some area (such as conservation) rather than a generalist. Finally, they also said that CIDA would like to participate in any program of institutional strengthening that we might develop for the Ministry of Industry's Energy Department.

3. We should hear further from them in 3 - 4 weeks once they have assimilated the assessment report and prepared a proposal on specific collaboration.

Kenya

4. I briefed the concerned Programs and Projects staff on the findings of the recently completed Energy Assessment Status Report and in particular on the proposed technical assistance projects that the report had identified. They were greatly interested in helping to finance some of these projects. During the meeting they committed themselves in principle to providing the ESMP with \$400,000 to carry out a detailed coal import study and a parallel study of the potential for energy efficiency improvements and coal conversion in the industrial sector. The coal import study will establish the potential market for imported coal in the industrial, power generation and household sectors; identify the infrastructure requirements for coal imports, handling and distribution; and evaluate potential sources and financial/contractual



mechanisms for imported coal. As a large part of the demand for coal in the industrial sector will emanate from the conversion of existing oil-based plants, a realistic evaluation of the market will require an analysis of the potential for coal conversion in the major industrial users at a plant by plant level. In carrying out this plant level work, a preliminary estimate of the potential for improving the efficiency of energy use would also be made. Indeed CIDA officials indicated that they attached a high priority to this work producing a prefeasibility report for an energy conservation program in the major energy users as well as an assessment of the coal use potential. Upon completion of this study, a subsequent phase would prepare detailed designs for the individual investment projects identified therein (conservation and retrofitting, coal conversion in specific industries, infrastructure, port handling, etc.). This phase could be financed through bilateral assistance from CIDA or other agencies (outside the ESMP framework) or through PPF type of assistance by the multilaterals.

5. The next step in obtaining these funds, which would be untied contributions to the ESMP, is for us to prepare a brief terms of reference and scope of work for the proposed study along with an estimated breakdown of cost. Mike Jenkyns in CIDA will then obtain the necessary clearances and authorization for disbursement which will probably be made through the Energy Account. However, before we can proceed further on this, we need to resolve the internal problem that some of this work will duplicate the energy conservation technical assistance component of the proposed Refinery Project. The uncertainty affecting the timing of the refinery project has already prompted the Government to ask us to finance the energy conservation component out of the ESMP. Now that we can obtain grant financing for this study without losing Bank control to ensure quality, there is all the more reason to proceed on the conservation portion quickly and independently. I will arrange a meeting with Messrs. Kohli and Segura to resolve this question.

6. I was also given a copy of a report prepared by consultants for CIDA outlining a proposal to strengthen the policy formulation and analysis capability in the Kenyan Ministry of Energy. The proposal envisages the secondment of upto 11 resident energy advisors to the Ministry of Energy for upto five years. Some assistance to the Kenyan National Oil Company is also proposed. CIDA would very much like to have our comments on this proposal. I agreed to obtain these comments from the various concerned divisions in the Bank and to pass them back to Mike Jenkyns as soon as possible. It is important for us to review this proposal carefully because the proposed program of assistance is large and appears, on a quick reading, to be too heavily biased towards resident advisors (as opposed to specific short-term consultants) and towards policy formulation rather than program implementation. I am following-up on this question within the Bank.

#### Central African Power Company Study

7. I discussed with Mr. Brassard, the possibility of CIDA funding part of the costs of the proposed institutional study for CAPCO. (As you



know we are financing the reconnaissance phase of this study from the ESMP.) The exact requirements and costs of the technical assistance necessary to carry out this study will only be defined after the reconnaissance mission but ab initio it appears that a power economist, a power engineer and a legal/institutional specialist would be needed for six months each. Thus the estimated total cost would be in the range of \$250 - 350,000. Mr. Brassard indicated that CIDA would consider such a request favorably and that this scale of funding was not likely to pose any problems. The contribution would probably be untied in principle, but they would like to see some of these funds used for Canadian consultants (which should be easy to arrange given the nature of the specialists required). I am confident that we will be able to get upto \$350,000 for this work. I have agreed to send them some additional information on this project and we will make a formal request once the requirements and scope of work have been clarified by Mr. Damry's reconnaissance mission.

#### Other Matters

8. Mr. Soutter informed me that the project approval memorandum for the overall CIDA contribution into the Assessment Program is being drafted and we should get a response (which he expects to be positive) within a month. The amount involved is C\$ 2 million. On the ESMP, he felt that a country by country approach would be necessary to complement any general agreement. I agree. We can have an overall understanding with CIDA on the ESMP but my perception is that actual financial contributions will best be realized by proposing specific projects to the concerned bilateral desk officers. The impression I got is that substantial unutilized funds exist in many of the bilateral programs and that a concerted and sustained effort on our part would generate substantial results. As part of this effort, we need to meet regularly and frequently with the relevant CIDA staff. I proposed to Mr. Soutter that I would visit Ottawa every 8 weeks or so to discuss ongoing and proposed ESMP projects with them. I would take with me any of our staff involved with these projects and Martin Soutter would ensure that the relevant CIDA staff were briefed and available. A similar arrangement could be worked out for the assessments.

9. Finally, Mr Soutter asked me to follow-up on a letter which the UNDP/Bank were supposed to send to CIDA confirming that the reporting requirements they had outlined in their March 1983 letter were acceptable to us. I will follow-up on this when we meet with UNDP this week.

cc: Messrs. Rovani, Rao, Kalim, Wackman

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List of CIDA Official Met on July 15 Visit


Pierre David	Country Program Director (Senegal)
Kenneth M. Cook	First Secretary and Consul, Canadian Embassy, Dakar
Lise Groleau	Project Officer (Senegal)
S. M Jenkyns	Country Program Director (Kenya)
William D. Rolston	Planning Office (Kenya)
Brodie Anderston	Senior Project Officer (Kenya)
Peter Dale	Energy Consultant (Kenya)
Raynald Brassard	Country Program Manager (Zambia/Zimbabwe)
Martin Soutter	Bilateral Project Coordinator

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Chan

# OFFICE MEMORANDUM

TO: DISTRIBUTION

FROM: Masood Ahmed, EGYEA 

DATE: July 14, 1983

SUBJECT: Energy Sector Management Program, Activity Initiation Report  
BURUNDI: Technical Assistance for Reviewing Petroleum  
Import and Distribution Arrangements

Attached please find draft terms of reference for the above exercise which is to be funded under the joint UNDP/World Bank Energy Sector Management Program (at an estimated cost of \$30,000). The energy assessment report for Burundi, completed in June 1982, identified this area as a high priority for follow-up technical assistance. Thereafter, the Government asked the Bank to provide this assistance under the ESMP and the scope of work was discussed and agreed with the Minister for Energy and his colleagues during their March 1983 visit to the Bank. Please send any comments you might have to Mr. Akin Oduolowu, (ext. 75272) or myself, (ext. 74545).

DISTRIBUTION

Messrs: Gue, de Capitani, Freire (EA2), Wyss, Bronfman, Erkmen, Gusten (EAP), Rovani, Rao, Bourcier, Sadove, Sheehan, Iskander, Fish, Dosik, Saunders, Bharier, Kalim, Wackman, (EGY)  
 Ms. Monceaux, (EA2), Ms. Vaughn, (EANVP)  
 EGYEA Staff

MAhmed:lwa



DRAFT

TO: Mr. Michel Rocheron, (Consultant)  
FROM: Masood Ahmed, EGYEA  
DATE: July 15, 1983  
SUBJECT: BURUNDI: Terms of Reference for Technical Assistance  
in Reviewing Oil Purchasing Agreements

1. The principal objective of this assignment is to assist the Government of Burundi in reviewing and evaluating alternative mechanisms for the import and distribution of petroleum products so as to determine whether the current economic cost of these imports could be feasibly reduced.

2. In carrying out this assignment, you will be expected to (i) analyze the principal alternatives for product imports and review institutional arrangements for imports and internal distribution; (ii) provide lists of commercial contacts and information sources that may be useful to the government officials; and (iii) present a brief seminar on oil markets to Government officials. At the end of your assignment, you will prepare a detailed report on item (i) and provide a summary of your findings in the other areas. More detailed descriptions of these elements are as follows:

A. (1) Comparative Analysis of Options. You will prepare a comparison of existing arrangements with the alternative of purchasing products in the Gulf and shipment via Tanzania in terms of cost, reliability of supply and ease of

administration. The physical and institutional infrastructure requirements for the Gulf/Tanzania option should be spelled out in the analysis. Also, the comparison should be based on explicit assumptions regarding the terms of agreement with suppliers, shippers and Tanzanian authorities and the analysis should include the sensitivity of the costs of variations in the key terms of these agreements.

(2) Review of Institutional Arrangements. You should examine existing marketing and distribution arrangements and identify how they could be made more efficient. Analyze existing allowance and margins for internal distribution and marketing and relate to standard commercial practices on costs and loss allowances. Establish data reporting requirements by marketing companies to enable the government to effectively monitor petroleum import arrangements.

B. Commercial Contracts and Information Sources. You should provide the Government with a list of: (a) refineries in the Gulf and Western Indian Ocean areas with substantial exports of clean products and/or underutilized capacity. The list should indicate the refinery's ownership, operator, principal crude sources and markets; (b) companies in East Africa and/or the Western Indian Ocean who are active in the supply and shipment of oil products in quantities comparable to those required by Burundi. The type of activities engaged in by these companies and the countries involved should be noted; (c) standard trade information sources, including both publications and consulting



services, that the Government could use to monitor relevant international markets for crude oil, refining services, refined products, and shipping, with a description of the coverage, costs and frequency of each.

C. Seminar: Commercial Arrangements in the Downstream Oil Industry. The following areas should be covered during the seminar:

(1) Crude Oil Production and Pricing. Main producing centers and market participants. Meaning of GSP, Spot, Marker, Discounting, Premiums;

(2) Oil Refining. Basic processes and costs. Posted and spot prices. Main refining centers;

(3) Transport and Supply. Standard practices in crude and product trade. Relation of tanker size to freight costs, storage requirements, and carrying cost of working capital. AFRA and Worldscale. Clean and dirty tankers;

(4) Handling, Storage and Inland Transportation. Facilities needed to offload, store and transport oil by road, pipeline, or rail. Standard commercial practices and costs. Lifo and Fifo inventory accounting concepts and implications for supply costs;

(5) Supply Option.

(a) Ownership of a Refinery: Minimum economic scale; contract versus spot crude supply; private versus government to government deals.

(b) Processing Deals: Varieties of commercial practices in contracting for refinery services; basis for negotiating costs, product slate, and refining losses; dealing with surplus products.

(6) Incountry Distribution and Marketing. Standard commercial practices, costs and loss allowances. Number of products and product specifications. Government/marketer relations; and finally;

(7) The implications for Burundi with its market size, product mix, geographic position, historical and existing oil supply arrangement.

Other items should be included if requested by Government of Burundi officials

3. In the course of the assignment it may be necessary for you to visit Tanzania with the Government of Burundi officials to advise on adequacy of storage, transshipment and transport facilities between Tanzania and Burundi.

4. Timing Duration. This assignment is expected to last about five to six weeks, consisting of upto two weeks in Europe prior to your mission to collect and analyse relevant data, about two weeks in Burundi (where you should plan to arrive on or about August 1) and then upto weeks in Geneva to prepare your report. The duration could be extended if necessary but any such extension must be agreed to by the Bank and the Government of Burundi. Prior to leaving for Burundi, you should visit Washington in the week of July 25 for 1-2 days to consult with the relevant Bank staff and to



obtain any further background information you require on this assignment. On the completion of your work in Burundi, you will return to Geneva to complete your draft report (in English) which should be sent to the Bank by the end of August. Thereafter, you may be required to return to Washington to discuss the report with Bank staff and to finalize it in the light of their comments.

AOduolowu/lwa

July 13, 1983

Mr. Khodadeen Sumodhee  
Permanent Secretary  
Ministry of Energy and Internal Communications  
Government Centre  
Port Louis  
MAURITIUS

Dear Mr. Sumodhee,

Re: Energy Planning and Management  
Project (MAR/82/006)

Further to my letter of March 3, 1983 to Professor Kasenally, I am writing to follow up on the progress made in the implementation of the above project and to elicit your proposals for the utilization of the remaining funds allocated under the project for calendar 1983.

As you know, the initial activity funded under the project was the Institutional Analysis of the Energy Policy and Projects Division carried out by Dr. Meier in January this year. His report, which was sent to your Ministry in March this year, contained a variety of recommendations in the areas of staffing and training, acquisition of office equipment and for short-term consultancy assignments to analyze key issues. The report also pointed out that an urgent priority for effective energy sector management was to strengthen the staffing of the Energy Policy and Projects Division by recruiting an additional energy economist and an energy planner/engineer. I know that you have been pursuing this question and I would be grateful if you could let me know where this matter now stands.

A related issue is the progress in recruiting the ODA financed energy advisor for your Ministry. When I last discussed this matter with Mr. Kisnah I was told that a Dr. Kennedy had been proposed as a candidate by ODA but that no final decision had been taken. As the work of this energy advisor is closely integrated with the tasks to be carried out under the Energy Planning and Management Project, I would like to ascertain the progress made in this area.

A second matter which I would like to raise relates to the ongoing and planned efforts in the area of utilizing bagasse for electric power generation. I have received, from Mr. Norland Suzor of Syner-Tech Inc., a proposal for a detailed feasibility study of a program to utilize bagasse more efficiently in eight factories earmarked for power production. I understand that this proposal has been discussed with and is supported by the staff in your Ministry and that funds are being



sought for it from UNDP. My colleagues and I have reviewed this proposal and feel that it would be a useful and timely exercise in further defining the specifics of a bagasse utilization project. However, it would be important to spell out just how this effort would fit in with the other activities now underway or proposed in the general area of improving the efficiency of bagasse use. I would also like to learn whether you propose to utilize any project funds for this study or would like the Bank to assist in identifying other sources of finance to carry out this work.

Let me turn now to the other ongoing activity under the Energy Planning and Management Project, i.e., the reinterpretation of offshore seismic data by Digicon, Ltd. I am informed by my colleagues in the Petroleum Division of the Bank that Digicon's work is well underway and should be completed by the end of August at which time a final report on this work will be submitted to the Bank and to yourselves.

Finally, regarding the administrative and reporting arrangements for the project, I would like to point out that no quarterly progress reports on the project have as yet been received. As you know these are required under Part III B of the Project Agreement and I would be grateful if you could take early action on this matter.

May I also take this opportunity to propose that the next mission to supervise the project and to discuss these issues in detail with you and your colleagues be scheduled for September 1983. I would be grateful if you could let me know whether the proposed mission would be convenient for you and I also look forward to hearing from you on the other matters raised above.

In view of their interest in these matters, I am copying this letter to Mr. R. Bheenick, Ministry of Economic Planning and Development; and Mr. H. B. Danisman, Resident Representative of the UNDP.

With best personal regards.

Yours sincerely,



Masood Ahmed

cc: Messrs. R. Bheenick, Ministry of Economic Planning and Development  
H. B. Danisman, Resident Representative, UNDP, Mauritius

bcc and cleared with Mr. Chadwick (EA2); Mr. Wackman (EGY)  
bcc: Messrs. Schott, Devaux (EA2); Erkmen (EAP); T. Jones (LEG);  
Bharier (o/r), Warren, Schaeffer (EGY)  
Ms. Vaughn (EANVP)

## Energy Assessments and Sector Management Programs

### Program Administrator

#### Responsibilities and Scope of Work

##### Summary

The principal objective of this position is to enable the UNDP to maintain continuous and effective liaison between two joint World Bank/UNDP energy programs with potential donors to the programs and with other UN agencies and departments.

The Program Administrator will be based in the Division for Global and Interregional Projects (DGIP) in UNDP, New York and will report to the Head of that Division. His detailed work program will be determined by the Head of DGIP in consultation with the Division Chief, Energy Assessments Division of the Bank. He will need to maintain regular contact with World Bank staff in Washington and in particular with the Managers of the Energy Assessment and Management Programs in the Energy Assessments Division. As such, he will visit Washington regularly (approximately once a month) for consultations with the relevant Bank staff.

##### Detailed Responsibilities

The Program Administrator will be responsible for the following activities:

###### A. Liaison with Other Agencies

1. Maintain regular contact with existing and potential donors to



programs; assist the Head of DGIP in following-up on pledges of financial support; report to the Chief, Energy Assessments Division, on the progress made in obtaining funds.

2. Identify and evaluate the alternative mechanisms that could be used to accept financial contributions to the Energy Assessment and Sector Management Programs. These include the use of the UNDP Energy Account, the establishment of a specific or general Trust Fund for the Programs or the use of third party cost sharing arrangements. Inform potential donors of the relative merits of these mechanisms and establish modalities appropriate for the requirements/preferences of individual donors.

3. Prepare any specific budgetary or other progress reports required by individual donors;

B. Within the UN System:

4. Regularly brief staff in regional bureaux, other departments and agencies on the status of ongoing and proposed assessment missions and reports as well as on their findings and the potential for follow-up activities.

5. Ensure that Blue Cover Assessment Reports are distributed to all concerned staff in the UN agencies;

6. Identify ongoing or proposed energy projects in the UN system which have a bearing on the assessments or follow-up sector management work and bring these to the attention of the relevant staff in these programs; monitor progress on these projects as necessary for assessment/energy sector management work.
  
7. Identify the potential for utilizing funds from the country IPF's, regional or other special programs, etc., for either assessment or follow-up work in individual countries; subsequently, define the specific modalities on how these funds could be used to carry out such work. Maintain regular contact with the Managers of the Energy Account.
  
8. Handle all communications with UNDP Resident Offices in the countries where assessment or management work is being carried out. In particular, ensure that Resident Representatives are fully informed of any mission proposed under the program. Follow-up with Resident Representatives to obtain Government interest in and response to Assessment mission. Clarify with the Resident Representatives the specifics of any Government requests for UNDP assistance in briefing other donors on Assessment Report or in obtaining their proposals for subsequent technical assistance; ensure that the necessary arrangements are made to carry out these activities. In particular, take primary responsibility for organizing, with the Resident Representatives, any donors' meeting or Round Table conferences to follow-up on individual assessment reports.



9. Prior to the fielding of Energy Assessment Status Report missions under the Energy Sector Management Program, obtain from the Resident Representative a list of all the ongoing technical assistance activities in energy in the country.
  
10. Maintain up-to-date budgets on the Assessment and Sector Management Programs and on any sub-projects undertaken therein; coordinate this work with the Administrative and Budget Officers in the Energy Assessment Division.
  
11. Prepare revised project documents for the Energy Sector Management and Assessments Programs as additional funds become available or to reflect other changes.
  
12. Brief Energy Assessment Division staff on items of specific or general interest as appropriate.

**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

July 13, 1983

Ms. Maria Isabel Bustos  
Office for Projects Execution  
United Nations Development Programme  
One UN Plaza  
New York, NY 10017

Dear Ms. Bustos,

Re: Letter of Agreement: International Bank for  
Reconstruction and Development (IBRD) and the  
United Nations Development Programme (UNDP)

Based on recent consultations between officials of IBRD and UNDP regarding the association with your Organization in the implementation of Project INT/83/005 of UNDP/World Bank Energy Sector Management Program-- of which IBRD is Executing Agency, I am pleased to confirm our acceptance for your providing services towards the implementation of this project in accordance with the Project Document and with the following terms and conditions:

1. The Office for Projects Execution in UNDP (hereinafter referred to as the "Associated Agency") shall assume responsibility for providing services as described in Annex I of this Agreement, and in accordance with the terms of reference included therein.

2. IBRD (hereinafter referred to as the "Executing Agency") retains the overall responsibility for the execution of the Project through its Project Manager (hereinafter referred to as PM) who is the representative for the project vis-a-vis the Governments.

3. The Associated Agency in consultation with the Executing Agency shall establish the detailed job descriptions for the staff (Program Administrator and Secretary) of the Associated Agency engaged for the Project.

4. Upon acceptance of this letter and pursuant to the Work Plan and Budget of the Project Document, the Executing Agency shall reserve funds in the amounts set out in Annex II, subject to the following:

- (i) Expenditures for personal services of the Program Administrator and for the secretarial staff member, as may be provided in Section I of Annex II are limited to reimbursements to the Associated Agency for salary and fringe benefits. The Executing Agency will pay for the provision of these services at the actual cost for the expert as determined by the Associated Agency. Adjustments of the man/months of services referred to in Annex II, may be made in consultation between the



Associated Agency and the Executing Agency if this is found to be in the best interest of the project.

- (ii) Within the budgetary limitations of the Project Document, the Executing Agency shall be responsible for providing all travel expenses and related insurances as may be required by the Associated Agency personnel in carrying out their assignment. However, with the prior agreement of the Project Manager of the Executing Agency, expenditures for these services may be incurred by the Associated Agency and reimbursed by the Executing Agency.
- (iii) The amount provided for in Section V of Annex II represents 11 percent of the total amount as provided for in Section I to IV of Annex II.

5. A financial accounting shall be submitted by the Associated Agency to the Executing Agency, on a semi-annual basis within one month after the close of the reporting period and at the completion of the Associated Agency's services in accordance with the form attached hereto as Annex III. The Executing Agency shall arrange to have the Associated Agency reimbursed upon receipt of the periodic accountings which shall be within the limitations set out in paragraph 4 above and the units of assistance to be provided in accordance with Annex II shall not be accepted unless the prior authorization of the Executing Agency has been obtained. Reimbursement by the Executing Agency to the Associated Agency shall be handled centrally by the Accounts Section of UNDP on the basis of summary statements presented semi-annually by the Associated Agency in the form of Annex IV. The Associated Agency's remittance account would be credited, with a corresponding debit to the Executing Agency's remittance account.

6. The Associated Agency shall submit such other reports as required by the Executing Agency in connection with its obligation to submit a report to Governments.

7. The Associated Agency shall provide the Executing Agency with curricula vitae and job descriptions of the personnel assigned to the project.

8. Any changes to the Project Document which would affect the work being performed by the Associated Agency in accordance with Annex I shall be recommended only after consultation with the Associated Agency.

9. Any amendments to these arrangements shall be effected by mutual agreement through an appropriate supplementary letter of agreement.

10. For any matters not specifically covered by this agreement the appropriate provisions of the Project Document and amendments or adjustments thereto and the appropriate provisions of the Financial Regulations and Rules of UNDP shall mutatis mutandis apply.

11. All further correspondence regarding the implementation of this agreement should be addressed as follows:

For the Associated Agency:

Office for Projects Execution  
United Nations Development Programme  
United Nations, 1 United Nations Plaza  
New York, NY 10017

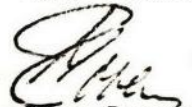
For the Executing Agency:

Energy Assessments Division  
Energy Department  
The World Bank  
1818 H Street N.W.  
Washington, DC 20433

12. If you are in agreement with the above, would you kindly sign and return to this office two copies of this letter. Your acceptance would thereby constitute the basis for your organization's association in the implementation of this project.

13. In view of their involvement in this matter, I am copying this letter to Mr. W. Mashler, Senior Director, Division for Global and Interregional Projects.

Your sincerely,



Yves Rovani  
Director  
Energy Department

Signed on behalf of UNDP (Associated Agency)

---

Name and Title

---

Date



## ANNEX I

### DESCRIPTION OF SERVICES

Project symbol: INT/83/005 Project title: UNDP/World Bank  
Energy Sector  
Management Program--a  
Technical Assistance  
Program linked to the  
Energy Sector  
Assessment Program

#### Work to be performed by Associated Agency

The Associated Agency will establish and maintain a focal point for the Energy Assessment and Energy Sector Management Program within the UN system. It will be responsible for all liaison activities between the staff working on these programs and the relevant staff in all other UN agencies/departments that are engaged in related activities. It will also be responsible for the necessary liaison and follow-up with existing and potential donors to the Programs.

To carry out these tasks, the Associated Agency will utilize the funds provided under this agreement to recruit a full-time higher level staff member (Program Administrator) and a secretary/administrative assistant to work with him. Both individuals are expected to devote their work time primarily to the Energy Assessment/Sector Management Programs.

#### General description

As outlined in Project Document signed on 6 April 1983 hereto appended as Annex V.

#### Terms of Reference

To be determined in consultation with the Executing Agency.

ANNEX II

SCHEDULE OF SERVICES AND FACILITIES TO BE PROVIDED BY THE ASSOCIATED AGENCY

	Budget Line	Total expert months	Total costs	Estimated Expenditures by Year		
				CY83	CY84	CY85
Section I						
(a) Experts						
Program Administrator	11.3	24	176,400	28,000	86,800	61,600
Secretary	13.6	24	39,000	9,000	20,000	10,000
(b) Consultants						
Subtotal		48	215,400	37,000	106,800	71,600
-----						
Section II						
Subcontracting		-	-			
-----						
Section III						
(a) Fellowships		-	-			
(b) Other training facilities		-	-			
-----						
Section IV						
Equipment						
			<b>Delivery Date:</b>			
-----						
Section V						
Miscellaneous		-	-			
-----						
Section VI						
Support Costs @ 11%			23,700	4,070	11,750	7,880
-----						
GRAND TOTAL			239,100	41,070	118,550	79,480



ANNEX III (a)

(UNDP - Division for Global and Interregional Projects)

STATEMENT OF EXPENDITURE ON UNDP PROJECT (INT/83/005)

FOR SIX MONTHS ENDED 30 JUNE 19\_\_

	Total amount allocated	Expenditure Current year			Balance of allocation	Estimated expenditure 1 July to 30 December <sup>c/</sup>
		Prior years	six months to 30 June <sup>b/</sup>	Total		
	m/m \$	m/m \$	m/m \$	m/m \$	m/m \$	m/m \$
<b>I. Personnel Services</b>						
Experts <sup>a/</sup> Budget line						
Consultants						
Other						
Subtotal						
<b>II. Subcontracts</b>						
<b>II. Training</b>						
Fellowships						
Other						
Subtotal						
<b>IV. Equipment</b>						
Expendable						
Non-expendable						
Subtotal						
<b>V. Miscellaneous services</b>						
Operation and maintenance of equipment						
Report costs						
Sundry						
Subtotal						
Total project costs						
Support costs thereon						
<b>GRAND TOTAL</b>	-----	-----	-----	-----	-----	-----

<sup>a/</sup> Indicate nationality of each expert and the duration of the contract.

<sup>b/</sup> Disbursements only.

<sup>c/</sup> Including estimated unliquidated obligations as at 31 December.

ANNEX III (b)

(UNDP - Division for Global and Interregional Projects)

STATEMENT OF EXPENDITURE ON UNDP PROJECT

FOR SIX MONTHS ENDED 31 DECEMBER 19\_\_

	Total amount allocated	Expenditure Current year				Total	Balance of Allocation	1 Jan. to 31 December of following year
		Prior years	six months to 30 June <sup>b/</sup>	six months to 31 December <sup>c/</sup>				
	m/m \$	m/m \$	m/m	\$ m/m	\$	m/m	m/n	\$
<b>I. Personnel Services</b>								
Experts <sup>a/</sup>								
Budget line								
Consultants								
Other								
Subtotal								
<b>II. Subcontracts</b>								
<b>II. Training</b>								
Fellowships								
Other								
Subtotal								
<b>IV. Equipment</b>								
Expendable								
Non-expendable								
Subtotal								
<b>V. Miscellaneous services</b>								
Operation and maintenance of equipment								
Report costs								
Sundry								
Subtotal								
Total project costs								
Support costs thereon								
<b>GRAND TOTAL</b>	-----	-----	-----	-----	-----	-----	-----	-----

a/ Indicate nationality of each expert and the duration of the contract.

b/ Disbursements only.

c/ Including estimated unliquidated obligations as at 31 December.



ANNEX IV

INTER-AGENCY SUBCONTRACTING

STATEMENT OF EXPENDITURE INCURRED ON BEHALF OF (IBRD)  
BY ASSOCIATED AGENCIES IN THE EXECUTION OF UNDP PROJECTS  
FOR SIX MONTHS ENDED \_\_\_\_\_

<u>Associated Agency</u> <u>project number</u>	<u>Project Costs</u> <sup>a/</sup>	<u>Support Costs</u>	<u>Total</u>
A. ( <u>Associated Agency</u> )			
	Project No.		
	Project No.		
	Project No.		
	Due to (Associated Agency)		
B. ( <u>Associated Agency</u> )			
	Project No.		
	Project No.		
	Project No.		
	Due to (Associated Agency)		
C. ( <u>Associated Agency</u> )			
	Project No.		
	Project No.		
	Project No.		
	Due to (Associated Agency)		
D. <u>Total due to Associated Agencies</u>			

a/ For the six months ended 30 June - disbursements 1 January to 30 June. For the six months ended 31 December - disbursements 1 July 31 December, plus unliquidated obligations at 31 December.

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: 

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, <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.

---

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>
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 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.



Chon

1 1 75272

MR. JEAN BREUX, CATCH OVERSEAS S.A.,

GESTOMAR, GENEVA

AAA REFERENCE TO YOUR TELEX NUMBERS 1374 AND 1376. WE ARE PLEASED TO ACCEPT YOUR RECOMMENDATION OF MR. MICHEL RECHERON IN PLACE OF MR. ORSATELLI (REFER OUR TELEX 6/28/83) FOR THE ASSIGNMENT IN BURUNDI.

BBB WE ARE AWAITING GOVERNMENT OF BURUNDI'S CONFIRMATION ON MR. ROCHERON'S ACCEPTIBILITY AND WILL SUBSEQUENTLY PROCESS HIS LETTER OF APPOINTMENT AND MAKE NECESSARY TRAVEL ARRANGEMENTS, ETC. ALL OTHER CONDITIONS FOR THIS ASSIGNMENT WILL REMAIN AS PER OUR TELEX OF 6/28/83. THANKS AND REGARDS. M. AHMED, ENERGY DEPARTMENT, WORLD BANK.

telex

429 402 SMAR CH

7/11/83

A0duolowu:lwa

cc & C/with: M. Ahmed  
cc: Ms. Monceaux (EA2),  
Messrs. N. King, A. Oduolowu,

H. E. Wackman, Acting Chief, EGYEA  
Energy

*Masood's chron file*

**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

July 7, 1983

Mr. A. B. Harland  
Deputy Administrator and Director  
Energy Office  
United Nations Development Programme  
Room FF-1080  
1 United Nations Plaza  
New York, NY 10017

Dear Bruce,

Thank you for your letter of June 20 and the attached revised project document for the Power System Loss Reduction Study. As you requested, I am enclosing a copy of the completed reports for Zimbabwe and Panama for your information and comments. The report for Sri Lanka is under preparation and will be sent to you as soon as it is available.

Regarding your comments on the cost of these studies, I agree with you that these have turned out to be higher than contemplated at the time that the project was envisaged. Part of this increase is due to the higher-than-expected one-time costs incurred in starting up the program--acquisition of computers and associated software, etc. But it is also true that we underestimated the time and costs that would be associated with carrying out these studies in their initially envisaged form. A major problem that has appeared in all three studies is that basic data which was generally assumed to be available--system power factor, circuit loadings, etc.--simply did not exist. Consequently, the computer work had to be expanded to include testing alternatives assumptions for the existing conditions in order to establish a reasonable simulation.

At the same time, I would like to emphasize that these studies have been extremely worthwhile even at their higher cost. In all three countries they have identified concrete opportunities for loss reduction with substantial and quick payoffs. Some of the recommendations in the Zimbabwe and Panama reports have already been taken up by the Governments concerned and I believe that they will also be of great interest to many bilateral agencies. Both the Bank and Governments (e.g. Malaysia) are planning to base projects on forthcoming studies, and the regional development Banks have expressed interest. Moreover the project has served to increase awareness of the potential for economically attractive loss reduction in the power sector, both in the countries concerned and amongst the Bank's operational staff.

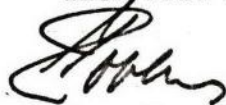


Given these positive results, we intend to continue to place a high priority on power loss reduction work in the context of the Energy Sector Management Program. However, given the limited resources now available for the program and the competing priorities for using these resources, we would need to modify the scope of this work from the one that we have used to date. To this end my staff have developed an alternative approach to these studies which would reduce their cost by restricting the use of the computer-based simulation runs and by focussing the work primarily on the identification steps needed to define specific loss reduction opportunities (e.g. more emphasis on terms of reference for consultants and qualitative evaluations of system performance). In effect, this would move the studies one step "upstream" from those completed under the preparatory project. A further source of cost reduction will be the lower administrative costs associated with merging this program with the broader activities of the Energy Sector Management Program. We propose to try out this alternative approach in either Kenya or Sudan in the coming weeks. I am confident that it will produce valuable results while remaining within the current resource constraints of the Program. I will, of course, keep you fully briefed on the progress of these efforts.

In the meantime, we are taking steps to close out the preparatory project as expeditiously as possible. One major need is to ensure that the computer programs are properly documented since, because of the change in staffing, a good reference file is essential. We hope to complete this work by mid-July and forecast that about \$40,000 will be available for transfer to the ESMP after the preparatory project is closed. We expect to send you a project completion report on the preparatory project by the end of July.

In view of his interest in this matter, I am copying this letter to Bill Mashler.

With best regards,



Yves Rovani  
Director  
Energy Department

Attachment

cc: Mr. William Mashler

cc and cleared with: Mr. J. Fish

cc: Messrs. Sheehan, Wackman, Bharier o/r, Kalim (EGY)

MAhmed:cra



w/attachment

bcc: Messrs. Anderson (EAI); Erkmen, Killoran (EAP); Rao, Fish, Bharier,  
Wackman (EGY)

MAhmed:cra

July 8, 1983

Mr. J. K. Gecau  
Chariman  
East African Power and  
Light Company, Ltd.  
P.O. Box 30099  
Nairobi  
KENYA

Dear Mr. Gecau:

Re: Power System Loss Reduction Study

Further to your correspondence with Messrs. Sear and Fish on the above subject, I am pleased to inform you that we are now able to undertake this study under the Joint World Bank/UNDP Energy Sector Management Program which has been designed to provide grant assistance to member countries to help them implement the recommendations of the World Bank/UNDP Energy Assessment Reports.

I am attaching a copy of the terms of reference for the proposed study for your review and comments. As described in Mr. Sear's letter of March 1, 1983, the purpose of the study is to make an audit of EAPL's system and operations so as to identify economically profitable loss reduction opportunities in the generation, transmission and distribution systems. However, as you will note from the attached terms of reference, the scope of the fieldwork and in particular the extent of the use of computer-based simulation techniques has been somewhat modified to reflect the additional experience we have acquired with this type of work.

The study will produce a short Project Identification Report identifying a series of measures that would achieve loss reduction or efficiency improvements, as well as a preliminary estimate of their costs and expected benefits. The program thus identified could then be executed either through the use of local resources or with the assistance of external financing agencies, many of whom attach a high priority to this area.

Subject to your agreement on the proposed terms of reference, we would suggest that a mission visit Nairobi in the first half of August to carry out the necessary fieldwork for the study. I would be grateful if you would let me know at your earliest convenience whether the proposed timing and scope of work are agreeable to you so that we can begin to mobilize the necessary staff and consultants.



In view of their interest in these matters, I am copying this letter to Mr. Kazaura, Permanent Secretary, Ministry of Finance, Mr. J. Masakhalia, Permanent Secretary, Ministry of Economic Planning and Development, and Mr. Ligale, Permanent Secretary, Ministry of Energy.

Yours sincerely,



Masood Ahmed  
Energy Sector Management Program  
Energy Department

cc: Messrs. Kazaura, Permanent Secretary, Ministry of Finance  
Masakhalia, Permanent Secretary, Ministry of  
Economic Planning and Development  
Ligale, Permanent Secretary, Ministry of Energy

POWER EFFICIENCY AUDITTERMS OF REFERENCEObjective

1. The objective of the audit is to define measures to be taken to implement cost-effective modifications to system facilities, operations, and construction standards to improve the technical efficiency of the power system and to reduce non-technical losses.

Scope

2. The audit will include a plant-by-plant survey of generating facilities, sample diagnostic studies of transmission and distribution circuits, a critical analysis of distribution system standards and practices, and a review of customer service activities including metering and billing. In-depth studies of such areas as management and organization, staffing, financial and accounting procedures and tariffs are outside the scope of the audit except to the extent that the audit findings lead to recommendations for further studies or improvements in such areas.

Procedures

3. In order to assess the overall efficiency and capability of the entity, a series of short interviews would be held with members of senior



management. This would show management's policy towards, and goals for, loss reduction. The information obtained on the principal problems being encountered would indicate where losses were occurring and what steps were taken or were contemplated to reduce losses.

4. The distribution system would be examined through discussions with appropriate staff and site visits to substations, distribution workshops and other facilities. Available statistics on system performance would be analyzed.

5. An assessment of the operating efficiency of thermal generating plants would be made by site visits and inspection of the equipment and through discussions and examination of plant and other records.

6. The information obtained from the above would be analyzed to identify areas where losses could be reduced; or where more detailed study would be justified; and changes or additions should be made to design criteria and operating and maintenance procedures. The course of action to implement these recommendations would be outlined.

#### Reporting

7. The results of the audit will be presented in a concise report. The recommendations will be presented in two phases:

- (a) The first phase would be in the form of a short-term Preliminary Loss Reduction Project which would outline immediate steps to be taken to improve the most urgent loss problems in the Transmission, Distribution and Generation Systems. It would cover a two or three year period. The project would be described and given a justification and approximate cost estimate. Where required, a Scope of Work or Terms of Reference would be provided to facilitate the contracting of consulting, engineering or other services or the implementation of the activities recommended under the project. This phase would include the following items where appropriate:

Transmission and Generation

- (1) Design criteria and construction standards.
- (2) System planning methods and procedures.
- (3) System operations and maintenance.
- (4) Service outages and their causes.
- (5) Voltage control and monitoring procedures.
- (6) Economic system load control and management methods.



- (7) Transmission and distribution circuit analysis using computer-based programs and the data base for this analysis.
- (8) Metering systems, operation, maintenance, testing, installations and service standards.
- (9) Meter reading, billing and monitoring procedures.
- (10) Transformer specifications and load management.
- (11) System and circuit power factor measurement and corrective measures.
- (12) System technical loss assessment, value of losses and estimate of loss reduction potential.
- (13) Review of nontechnical losses and measures to control them.
- (14) Construction methods, standards, equipment and procedures.

#### Generation

- (1) The boilers, turbogenerators and auxiliaries would be examined in detail to identify areas of losses or where rehabilitation was needed or where improvements in

efficiency could be achieved. The following items would be included where appropriate:

- (a) The scope for taking advantage of advances in technology by retrofitting more efficient parts in boilers, turbines and auxiliaries such as turbine blades and seals, boiler burners and excess air control.
  - (b) The adequacy and condition of manual and automatic controls.
  - (c) Maintenance programs, procedures and effectiveness.
  - (d) Plant operations efficiency.
  - (e) Fuel quality control.
  - (f) The needs for training programs will be assessed for Transmission, Distribution and Generating Systems in as far as this is related to improving efficiency.
- (b) The second phase would be in the form of a Long-Term Power Plant and Distribution System Betterment and Expansion Program covering a period of about five years after the Preliminary



Project. This would have a general description, an order of magnitude cost estimate and be defined objectively to specify desired results, criteria and approach.

8. In both the short term project and long term program the presentations would be in such form that they would be suitable for presentation for financing by a development bank or similar agency.

#### Criteria

9. System long-run marginal costs (LRMC) shall be used for valuing efficiency-improvement benefits. These costs shall be expressed in terms of capacity benefits (\$/kW) and energy benefits (\$/kWh) at each principal voltage level. Present-value or life-cycle costing shall be used for all analyses using appropriate opportunity costs (10% for capital unless otherwise specified).

#### Staffing and Work Program

10. The audit shall be performed by experienced engineers applying judgemental analysis. The field study should take two to three weeks which would allow three to four days for each major generating plant survey and two to three weeks for review of transmission and distribution systems. Total effort, including report preparation and travel, should not exceed two months

for a system of average size (say, 500 MW). The cooperating entities will provide data, office space, local transportation and counterpart staff for the duration of the survey.

#### Longer Term Benefits

11. Aside from the individual projects which might emerge from this study, there is the longer term benefit of reviewing existing or starting a new, organized, continuing loss reduction program which will keep future losses at acceptable levels and maintain high plant efficiencies.

12. In many cases today, power systems are in poor condition due to past failures to expand the distribution system and to keep up with growing demand or to repeated postponement of maintenance in generating plants. This may have been caused by capital scarcity or other reasons, but as often occurs, the point may have been reached where action can no longer be put off. This type of audit of the system highlights the areas most urgently requiring attention and sets the pattern for the progressive development of a Loss Reduction or Control Program.



*chron*

NOTES OF PHONE CALL WITH JULIAN BHARIER - 19 DECEMBER

DG VIII

RE projects sent to Fossatti -  
They will cofinance  
(i) Bolivia Bagasse  
(ii) Sri Lanka Rural Industry Efficiency

All that is needed is a request from Agency concerned and Planning Ministry to EEC specifying ESMP cofinancing.

Haiti - There is a SEMA study on wood and agricultural residues now underway. Will be finished in 6 months. Want to wait till then before financing anything.

Pierre Le Oueux is the new acting chief for Energy. Good man & interested in collaboration.

Sri Lanka - will also finance Mohan for another year. Require request from Government and Bank must extend leave.

SADCC - Feb 2nd Meeting at which SADCC will propose investment projects. Want to see what happens and would also like others to propose priority projects for meeting. What is Bank doing? Who will represent at meeting?

Action Thematique

Upto \$3 million for woodfuel projects in 1984 from 1983 budget. Will also get extra for 1984. Would like any woodfuel projects - Niger, Burundi, Rwanda are priority. Say \$200,000 a piece.

\* get proposals across.

Also \$1 million per year for cofinancing woodfuel projects may be available beyond 84.

DG 17

Turkey - would like to participate in assessment follow up.

India and Jordan also interested

Ecuador - already active - how links into assessment?

\* Send Le Oueux copy of Energy Staff List and all Assessments and ESMP reports.

Interviewed Katrina Sharkey -

YP candidate - check with Don Allison if likely to be selected. If not, could be good RA. Speaks English, French, Spanish, Portuguese.

NOTES OF PHONE CALL WITH JULIAN BHARIER - 21 DECEMBER

DG 17 (EEC) Clive Jones and Von Scholz

Turkey Willing to put in \$100,000 for power loss reduction.

India Energy Efficiency in Transport. They could put in upto \$200,000 per year to follow up on this. Can we send them Gary's report? Should Gary present report at Energy Efficiency meeting in India in January 1984? Check with DC.

Ecuador They have 12 people in the field in energy planning; they support assessment but would like to know how this fits in with the assistance they are providing.

If Dave is going back in January he should find out how all this fits in and if so whether some of this EEC assistance could fit into assessment. If so let us and EEC know.

Names for Ecuador: Director of INE is Maldonado - has Dave spoken to him? EEC deals with him.

EEC experts in field: Kublanck - conservation  
Letrand - solar  
Leponkin - geothermal  
Stancescu - ?  
Vernet - ?  
7 others

What are all these people doing? Why do they still need assessment? Can we direct their efforts into something useful?

DG VIII

Agreed to \$1 million cofinancing for ESMP in 1984: would finance about 10 activities of which half in households/half in power audits.

Need 1-2 page proposal on this by early January. Money comes from Action Thematique program for 1984.

Essentially they would give line of credit; consultants would be EEC countries, hired by EEC but reporting to us.

Each proposal has to take following shape:

1. Action number - they fill in
2. Beneficiaries - all LDC's
3. Description of action - about 6 lines
4. Objectives - 4 lines
5. Justifications - 4 lines
6. Means of carrying out the program - contractual arrangements - our staff collaboration with consultants from European country.



7. Cost estimates - division between fees and cost of missions - including administrative costs.
8. Length of operation - Work Program - should be completed in 1984.
9. Appropriation Administrative - ESMP staff member responsible & EEC responsible Piere Le Oueux.

(excludes earlier projects already agreed)

Send Le Oueux complete set of ESMP and Assessments Report preferably air freight.

Ask Le Oueux to visit Washington in February to discuss details.

Let Mashler know of both EEC and Bonn developments and send reply.

*Chun  
also copy to  
Ken.*

December 29, 1983 *(M)*

Mr. Ted White  
Petroleum Economics Ltd.,  
17-19 Barter Street  
London, WC A-2QA  
England

Dear Ted,

I was pleased to learn that PEL will be carrying out the analysis of petroleum product procurement options for Liberia in the context of the forthcoming energy assessment. As we have discussed before, this is an area of growing interest and importance for us because it has become increasingly clear that many countries can reduce their oil import bill significantly by optimizing their petroleum procurement and distribution strategy. Moreover, for a number of countries action in this area is one of the few options that can lead to quick improvements in their energy situation.

However, as I think I have mentioned to you, this is also a relatively new area of involvement for many of us in the Bank and we are still in the process of defining how far we can or should be involved in providing advice on this question to our member countries. For that reason, I attach a great deal of importance to the proposed work in Liberia, and I am hoping that you will be able to provide us with not only a thorough analysis of the options available to that country but also with a report that will set a framework for tackling this issue on a more general basis. Ideally, we should be able to use your report for Liberia as a kind of self contained guide for our staff on how to approach the issue of petroleum procurement for countries with similar characteristics. It may also be useful to have PEL present, some time during the next six months a seminar on the subject using the Liberia report as an actual case study.

Best regards for the New Year.

Yours sincerely,

D. C. Rao  
Assistant Director  
Energy Department



December 29, 1983

Dear Mr. McAlinden:

Thank you for your letter of December 9, 1983. I am pleased to attach for your information a copy of the November 1982 progress report on the Joint UNDP/World Bank Energy Assessments and Energy Sector Management Programmes. This progress report superceded the informal note of June 1982 and contains updated information on the same subjects. I am also enclosing an updated list of countries where assessments have been done or are currently planned. I hope this information will be useful to you. Please contact us if you will like further information.

Yours sincerely,

Masood Ahmed  
Acting Chief  
Energy Assessments  
Energy



Public Relations Department,  
The World Bank,  
Washington D.C.,  
U.S.A.

An Institiúid Tairghe  
Tionscal agus Cairgheán

Institute for Industrial  
Research and Standards

Ballymun Road,  
Dublin 9, Ireland  
Telephone (01) 370101  
Telegrams "Research, Dublin"  
Telex 25449

Our ref. R6/0.

Your ref.

9th December, 1983.

Dear Sirs,

A paper 'Making energy sector assessment studies in LDCs by T.W. Berrie is published in 'Energy Policy', Vol. 11, No. 4, December 1983. Two of the references quoted are:

The Joint UNDP/World Bank Energy Sector Assessment Program, Information Note, The World Bank, Washington D.C., U.S.A., June 1982 and

The Joint UNDP/World Bank Energy Sector Assessment Programme and Energy Sector Management Program: A Progress Report. The World Bank, Washington D.C., U.S.A., November 1982.

We would like to purchase copies of the two references. Please advise us of the cost by air mail.

Yours sincerely,

*Arthur McAlinden*  
Arthur McAlinden, Head,  
Industrial Energy Department.  
(Dublin).

AMCA/PC.

Dear Mr

*Thank you for your letter of — . I am pleased to attach for you info a copy of the NOV 1982 progress report on the Joint UNDP/IBRD Energy Audit & ISM Programmes. This progress report superseded the info. note of June 82 & contains updated info on the same subjects. I am also enclosing an ~~ISA~~ updated list of countries where accounts have been ~~made~~ <sup>made</sup> or are currently closed. I hope this info will be useful to you.*

*Beachline -  
bb  
handle.*

*You probably had info. I'd like further info. Please contact us if you'd like further info.*



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EGY / EGYEA

MESSAGE NUMBER

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(FOR CASHIER'S USE ONLY)

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MR. BO LOFGREN, PRESIDENT, SWECO, STOCKHOLM, SWEDEN. RE SEYCHELLES  
ENERGY ASSESSMENT. WE THANK YOU FOR PROVIDING THE SERVICES OF  
MR. ERIC HAAL AND APPRECIATE HIS MEETING MR. ZIA MIAN IN SEYCHELLES  
ON JANUARY 7 TO COMPLETE THE WORK PREVIOUSLY HANDLED BY MR. PERSSON.  
REGARDS, AND GREETINGS FOR THE NEW YEAR. MASOOD AHMED, ACTING  
CHIEF, ENERGY ASSESSMENTS DIVISION, ENERGY DEPARTMENT, WORLD BANK.

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CLASS OF SERVICE: <b>TELEX</b>		TELEX NO.: <b>17597 SWECO S</b>	DATE: <b>12.29.83</b>
SUBJECT: <b>SEYCHELLES: Energy Assessment</b>		DRAFTED BY: <b>MAhmed:jl</b>	EXTENSION: <b>74545</b>
CLEARANCES AND COPY DISTRIBUTION: <b>cc: Mr. Mian (o/r)</b>		AUTHORIZED BY (Name and Signature): <b>Masood Ahmed, Acting Chief, EGYEA</b>	
		DEPARTMENT: <b>ENERGY</b>	
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**WORLD BANK OUTGOING MESSAGE FORM** Cable, Telex  
IMPORTANT—PLEASE READ INSTRUCTIONS BELOW BEFORE TYPING FORM

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OFFICIAL DEPT/DIV  
ABBREVIATION

MESSAGE NUMBER

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(FOR CASHIER'S USE ONLY)

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MR. ZIA MIAN, CARE MR. J.K. GENTLES, JAMAICA MUTUAL LIFE,  
 MANDEVILLE, JAMAICA, W.I. EXTREMELY SORRY TO HEAR OF THE SAD NEWS.  
 PLEASE EXTEND OUR CONDOLENCES TO AVIL AND THE REST OF THE FAMILY.  
 REGARDS, MASOOD AHMED, ENERGY DEPARTMENT, WORLD BANK.

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INFORMATION BELOW NOT TO BE TRANSMITTED

CLASS OF SERVICE: <b>Telex or Cable</b>		TELEX NO.:	DATE: <b>12.29.83</b>
SUBJECT:	DRAFTED BY: <b>Mahmed:jl</b>	EXTENSION: <b>74545</b>	
CLEARANCES AND COPY DISTRIBUTION:		AUTHORIZED BY (Name and Signature): <b>Masood Ahmed</b> <b>Acting Chief, EGYEA</b>	
		DEPARTMENT: <b>Energy</b>	
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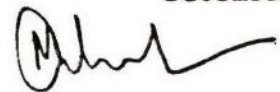
## OFFICE MEMORANDUM

Chron

TO: Distribution

December 28, 1983

FROM: Masood Ahmed, Acting Chief, EGYEA

SUBJECT: Caribbean Regional Arrangements on Petroleum Supplies and Transportation

1. The energy assessment mission to the Eastern Caribbean (St. Lucia and St. Vincent) has identified the need for a study on least-cost options for petroleum supplies, transportation, tanker-size and storage facilities. This study is considered to be of high priority and is expected to result in a project for establishing ocean transportation arrangements and terminal/storage facilities at the receiving ports. Discussions with Esso and Shell in Barbados; Texaco, Trintoc and the Trinidad & Tobago Government in Trinidad; Shell and Esso in Curacao and Aruba; Petro-Jamaica in Jamaica; and the Governments of St. Lucia and St. Vincent support the view that such a study is needed immediately. The oil industry has indicated its full cooperation and support in doing such a study. The industry has also promised to review the terms of reference for this study and emphasized that it should be commissioned and done by an appropriate institution like the World Bank to ensure impartiality.

2. The study is estimated to cost about US\$100,000. There are a number of options for financing this study including (i) the use of some funds allocated for such a study under the Bank's regional petroleum exploration project; (ii) the use of some funds from the joint UNDP/World Bank Energy Sector Management Program; and (iii) collaboration with the CDB or some other interested organization. However, before we explore these options, we would appreciate your comments on the attached draft terms of reference for the study. Please send these to Zian Mian (Rm. D444, Ext. 75284) or to myself (Rm. D448, Ext. 74545) at your earliest convenience.

Attachment

Distribution

Messrs. Moscote, Linder, Shields (LCP); Gonzalez-Cofino, Kanchuger (LC2); Segura (IND); Rao, Iskander, Saunders, Ferroukhi, Bates, Newcombe, Mian (EGY)

MAhmed:jl



### Terms of Reference

Title: A Regional Study of Petroleum Product Supplies, Tanker Size, Transportation and Storage in the Caribbean

Objective: To review the existing systems, and develop and recommend a least-cost 1/ regional strategy with regard to supplies, tanker size, transportation logistics and storage facilities for petroleum products in the Caribbean. 2/

Cost: Approximately US\$100,000.

#### Terms of Reference and Scope of Work

The principal objective of the study is to develop a least-cost allocation strategy for petroleum products in the Caribbean region. There are a number of features of the present modus operandi in the region which are considered sub-optimal:

- (i) the existence and operation of small obsolescent refineries and low utilization factors at large modern refineries;
- (ii) high freight costs (by world standards);
- (iii) inappropriate petroleum product pricing and taxation policies adopted by oil-importing Governments; and
- (iv) high marketing costs in small country economics.

The current pattern of petroleum supplies and distribution evolved during the pre-1973 era when oil companies competed for larger shares of an expanding petroleum product market. Furthermore, large investments were made in refinery capacity, tankers and storage facilities based on forecasts of continued low prices and high demand growth rates. This was the appropriate strategy at that time because of the high profit margins associated with crude oil production.

---

1/ Subject to security and continuity of supply objectives.

2/ A sub-option, of the Eastern Caribbean CARICOM countries also needs to be evaluated.

However, with crude production passing from the hands of the multinationals to the oil producing countries in 1973 and the oil price increases of 1973 and 1979, the outlook has changed radically. Refineries are operating well below optimum capacity, product demand growth has slowed, and marketing overhead costs have soared, resulting in the oil companies seeking larger margins to remain viable.

Therefore, the first task of the study team is to develop a detailed picture of existing petroleum product supplies in the region. In particular, operations need to be reviewed in order to pinpoint areas where costs are unusually high and where inefficiencies appear to exist. The study team should focus on the following aspects:

(i) Refineries

- capacity and location of all refineries in the region.
- current utilization factors.

(ii) Transportation

- tanker characteristics and scheduling in the region.
- role of chartered versus oil-company-owned vessels.
- freight rates by product, tanker size, oil company, and country served.
- estimate of freight costs based on current inventory practices and storage capabilities.

(iii) Port Facilities

- draught limitations.
- adequacy of infrastructure for unloading tankers.

(iv) Storage Capacity

- storage capacity, by product, by company, by country.
- description of current fuel inventory management practices.

(v) Market Demand

- demand by product, by company, by country.
- petroleum product taxation and supply security policies of countries in the region.
- marketing margins and description of distribution systems.



The study team should have sufficient expertise to be able to develop much of this information (in particular, cost estimates) independently of the oil companies operating in the region, in order to avoid any lingering suspicions concerning a lack of objectivity. It would furthermore be essential that the team is familiar with Caribbean geopolitics, since current petroleum supply patterns may not be economically efficient because of over-riding social and political objectives.

The principal objective of the study is to develop a long-run least-cost strategy for petroleum product supplies and distribution in the region. The team will be required to specify the methodology which they intend to use. This should be justified based on advantages over alternative methodologies. Weaknesses should also be clarified. The framework should facilitate sensitivity analysis of the least-cost solution, both to variations in critical parameters and to adjustments reflecting other objectives such as security and continuity of supply, and political, social and economic factors within the various countries in the region. These conditions are essential in order to develop a robust and realistic set of recommendations with regard to the least-cost strategy for the region.

The study recommendations should consist of an action program which will be aimed at achieving the least-cost allocation objective, incorporating both short- and longer-term adjustments to the supply, transport and distribution systems. Some of more critical issues which need to be addressed are as follows:

(i) Refineries

- closure of small, high cost refineries.
- need for additional cracking capacity to meet white product demand.

(ii) Transportation and Storage

- benefits/costs of constructing a centrally-situated product transshipment terminal to enable large cargoes to be moved from supply centers, with smaller tankers being routed from the terminal to their ultimate destination.
- efficient tanker scheduling to minimize freight costs based on optimal inventory levels and associated storage capacities.

(iii) Market Demand

- appropriate petroleum pricing policies reflecting economic costs of supply, incorporating inter-fuel substitution and energy conservation objectives.
- rationalization of marketing and distribution particularly in the small island economies.

Schedule

The study team will work closely with the oil industry (Texaco, Esso, Trintoc, Shell and Petrojam) and consist of two or three specialists (supply and transportation specialist; refinery specialist; and petroleum marketing analyst/economist). One Bank staff member will be responsible to monitor and coordinate team's work on a continued basis. After one month, the team will be required to make a presentation describing its progress. The draft report should be completed and submitted within four months of the award of contract.

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1. S. E. M. NYABOYA, MINISTRE DES TRAVAUX PUBLICS  
DE L'ENERGIE ET DES MINES  
BUJUMBURA, BURUNDI
2. S. E. M. KADIGIRI  
MINISTRY OF FINANCE  
BUJUMBURA, BURUNDI
3. Mr. B. CHATELIN  
RESIDENT REPRESENTATIVE, WORLD BANK  
BUJUMBURA, BURUNDI
4. MR. RASAFIMBAHINY  
RESIDENT REPRESENTATIVE, UNDP  
BUJUMBURA, BURUNDI

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CLASS OF SERVICE: **Telex** TELEX NO.: **977-95** DATE: **Dec. 27, 1983**

SUBJECT: <b>BURUNDI</b>	DRAFTED BY: <b>Wfloor:rp</b>	EXTENSION: <b>76164</b>
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CLEARANCES AND COPY DISTRIBUTION: <b>cc and cleared with: Ms. Monceaux</b>	AUTHORIZED BY (Name and Signature): <b>M. Ahmed, Acting Chief, EGYEA</b>
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DEPARTMENT: <b>Energy</b>
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TELEX ADRESSE A M. NYABOYA. REF. LE SUIVI A L'ETUDE PNUD/BANQUE MONDIALE "BURUNDI: PROBLEMES ET CHOIX ENERGETIQUES" (RAPPORT NO. 3778-BU). NOUS VOUS AVONS ENVOYE LE 27 DECEMBRE 1983 DES COPIES DES RAPPORTS "BURUNDI: ETUDE DU SECTEUR DE L'ENERGIE: RAPPORT D'ACTIVITE" ET "BURUNDI: ETUDE DE L'ORGANISATION DE L'IMPORTATION ET DE LA DISTRBUTION DES PRODUITS PETROLIERS," FONDES SUR LES CONCLUSIONS DES MISSIONS DE MESSIEURS KING (BANQUE MONDIALE) ET ROCHERON (CONSULTANT) A BUJUMBURA EN AOUT 1983. PAR CE QUE NOUS VOULONS CIRCULER LES VERSIONS FINALES DE CES RAPPORTS AU TABLE RONDE DE FEVRIER 1984, NOUS SOUHAITERIONS AVOIR VOS COMMENTAIRES SUR CES RAPPORTS ET VOTRE APPROBATION POUR LEUR PUBLICATION DANS LE CADRE DU PROGRAMME CONJOINT PNUD/BANQUE MONDIALE AVANT LE 23 JANVIER POUR FAVORISER LA GESTION DU SECTEUR DE L'ENERGIE ET POUR LEUR DISTRIBUTION AUX BAILLEURS DE FONDS. A NOTRE AVIS IL SERAIT TRES UTILE DE CIRCULER CES RAPPORTS PENDANT LE TABLE RONDE, PAR CE QUE TOUS LES DEUX ONT IDENTIFIES DES ACTIVITES DE SUIVI TRES IMPORTANTS DANS LE DOMAINE D'ASSISTANCE TECHNIQUE, LESQUELS POURRAIENT ETRE FINANCES PAR DES DONATEURS QUI SERONT REPRESENTES AU TABLE RONDE. (BBB) ETANT DONNE LA PRIORITE QUE VOUS ACCORDEZ A

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LA PREPARATION DES FICHES DE PROJET DANS LE SECTEUR D'ENERGIE  
 POUR LE TABLE RONDE, NOUS PROPOSONS QUE M. MIHAIL PETCU  
 (CONSULTANT) SE RENDE A BUJUMBURA LE 16 JANVIER POUR EFFECTUER CE  
 TRAVAIL. M. PETCU A UNE FORMATION DANS LE DOMAINE DE L'ENERGIE  
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 L'ENERGIE, NOTAMMENT EN TANT QUE CONSEILLER RESIDENT EN ENERGIE  
 AUPRES DU GOUVERNEMENT DU NIGER. DANS SON TRAVAIL SUR LES FICHES  
 DE PROJETS ENERGETIQUES AU BURUNDI, M. PETCU BENEFICIERA DE  
 L'APPUI DES SPECIALISTES DE LA BANQUE MONDIALE EN FORESTERIE QUI  
 DOIVENT SE RENDRE A BUJUMBURA FIN JANVIER. LES SERVICES DE M.  
 PETCU SERONT FINANCES A TITRE DE DON DANS LE CADRE DU PROGRAMME  
 CONJOINT PNUD/BANQUE MONDIALE POUR FAVORISER LA GESTION DU SECTEUR  
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 LA VISITE DE M. PETCU VOUS CONVIENT. HAUTE CONSIDERATION. MASOOD  
 AHMED, DEPARTEMENT DE L'ENERGIE, BANQUE MONDIALE.

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**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

December 27, 1983

Mr. Theodorou  
Calpak  
Cicero Hellas Industries  
268 Kifissias Avenue  
Chalandri  
Attikis, Greece

Dear Mr. Theodorou:

Thank you very much for your letter of December 13, enclosing literature on the Solar collector manufacturing and design capability of Cicero Hellas Industries.

The services you offer are of interest to us and we will keep you mind as consultants for relevant projects should the opportunity arise in the joint UNDP/World Bank Energy Sector Management Program. In the meantime, it would be useful to have prices FOB for your collector/tank units in lots of, say, 100 fully assembled but in knock-down form for shipping. Prices for each of the 120 and 160 types are of interest.

I look forward to your response.

Yours sincerely,




Masood Ahmed,  
Acting Division Chief  
Energy Assessment Division



## OFFICE MEMORANDUM

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

December 22, 1983

FROM: Masood Ahmed, Acting Chief, EGYEA SUBJECT: Caribbean Regional Arrangements on Petroleum Supplies and Transportation

1. The energy assessment mission to the Eastern Caribbean (St. Lucia and St. Vincent) has identified the need for a study on least-cost options for petroleum supplies, transportation, tanker-size and storage facilities. This study is considered to be of high priority and is expected to result in a project for establishing ocean transportation arrangements and terminal/storage facilities at the receiving ports. Discussions with Esso and Shell in Barbados; Texaco, Trintoc and the Trinidad & Tobago Government in Trinidad; Shell and Esso in Curacao and Aruba; Petro-Jamaica in Jamaica; and the Governments of St. Lucia and St. Vincent support the view that such a study is needed immediately. The oil industry has indicated its full cooperation and support in doing such a study. The industry has also promised to review the terms of reference for this study and emphasized that it should be commissioned and done by an appropriate institution like the World Bank to ensure impartiality.

2. The study is estimated to cost about US\$100,000. A regional oil and gas exploration project (UNDP/World Bank) has earmarked about US\$50,000 for such a study; this can possibly be increased to about US\$70,000. About US\$30-50,000 remain unidentified and sources such as (a) Industry Department; (b) ESMP; or (c) CDB should be investigated for this funding.

3. Draft terms of reference for the study have now been prepared and are attached for your comments. We expect that this work will cost about US\$100,000 and entail seven man-months of consultant time.

4. Before proceeding further with the review and finalization of the scope of work, we would be grateful for your guidance on how this study ought to be funded and supervised in the Bank. The principal options are:

- (i) Using \$50,000 allocated for such a study under the UNDP/Bank Regional Petroleum Project. The amount available could be increased to \$70,000 but there will still be a gap which will have to be met from other sources.
- (ii) ESMP funds to either supplement the regional project money or to fund the entire study - the only drawback is that this is unlikely to lead directly to further investments.

(iii) Bank administrative funds - either EGY or in collaboration with IND; we might involve IND in supervising this work regardless of the funding route chosen.

(iv) Sharing part of the costs with CDB which has indicated some interest in the study.

5. Could we meet today or tomorrow to discuss this matter before Zia leaves for three weeks?

Attachment

cc: Mr. Mian (EGYEA)

ZMian/MAhmed:jl



### Terms of Reference

Title: A Regional Study of Petroleum Product Supplies, Tanker Size, Transportation and Storage in the Caribbean

Objective: To review the existing systems, and develop and recommend a least-cost 1/ regional strategy with regard to supplies, tanker size, transportation logistics and storage facilities for petroleum products in the Caribbean. 2/

Cost: Approximately US\$100,000. 3/

#### Terms of Reference and Scope of Work

The principal objective of the study is to develop a least-cost allocation strategy for petroleum products in the Caribbean region. There are a number of features of the present modus operandi in the region which are considered sub-optimal:

- (i) the existence and operation of small obsolescent refineries and low utilization factors at large modern refineries;
- (ii) high freight costs (by world standards);
- (iii) inappropriate petroleum product pricing and taxation policies adopted by oil-importing Governments; and
- (iv) high marketing costs in small country economics.

The current pattern of petroleum supplies and distribution evolved during the pre-1973 era when oil companies competed for larger shares of an expanding petroleum product market. Furthermore, large investments were made in refinery capacity, tankers and storage facilities based on forecasts of continued low prices and high demand growth rates. This was the appropriate strategy at that time because of the high profit margins associated with crude oil production.

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1/ Subject to security and continuity of supply objectives.

2/ A sub-option, of the Eastern Caribbean CARICOM countries also needs to be evaluated.

3/ US\$50,000 - 70,000 from Caribbean Regional Petroleum Project, RLA/82/026, and balance possibly from ESMP or IND.

However, with crude production passing from the hands of the multinationals to the oil producing countries in 1973 and the oil price increases of 1973 and 1979, the outlook has changed radically. Refineries are operating well below optimum capacity, product demand growth has slowed, and marketing overhead costs have soared, resulting in the oil companies seeking larger margins to remain viable.

Therefore, the first task of the study team is to develop a detailed picture of existing petroleum product supplies in the region. In particular, operations need to be reviewed in order to pinpoint areas where costs are unusually high and where inefficiencies appear to exist. The study team should focus on the following aspects:

(i) Refineries

- capacity and location of all refineries in the region.
- current utilization factors.

(ii) Transportation

- tanker characteristics and scheduling in the region.
- role of chartered versus oil-company-owned vessels.
- freight rates by product, tanker size, oil company, and country served.
- estimate of freight costs based on current inventory practices and storage capabilities.

(iii) Port Facilities

- draught limitations.
- adequacy of infrastructure for unloading tankers.

(iv) Storage Capacity

- storage capacity, by product, by company, by country.
- description of current fuel inventory management practices.

(v) Market Demand

- demand by product, by company, by country.
- petroleum product taxation and supply security policies of countries in the region.
- marketing margins and description of distribution systems.



The study team should have sufficient expertise to be able to develop much of this information (in particular, cost estimates) independently of the oil companies operating in the region, in order to avoid any lingering suspicions concerning a lack of objectivity. It would furthermore be essential that the team is familiar with Caribbean geopolitics, since current petroleum supply patterns may not be economically efficient because of over-riding social and political objectives.

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MR. C. LEPITRE, DIRECTEUR DU BUREAU ETUDES TECHNIQUES, PARIS,  
 FRANCE. OBJECT. OFFRE CONSULTANT POUR COTE D'IVOIRE POUR SECTEUR  
 BOIS ENERGIE. VOUS REMERCIE POUR VOTRE TELEX PROPOSANT MR.  
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 ENERGY ASSESSMENT DIVISION, ENERGY DEPRETMENT, WORLDBANK

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CLEARANCES AND COPY DISTRIBUTION:		AUTHORIZED BY (Name and Signature): <b>Masood Ahmed, Acting Chief, EGYEA</b>	
		DEPARTMENT: <b>ENERGY</b>	
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MR. JEAN-DAVID ROULET, RESIDENT REPRESENTATIVE, INTBAFRAD, NEW DELHI, INDIA. DURING JANUARY AND FEBRUARY, 1984, DR. N. B. PRASAD, CONSULTANT, WILL BE LEADING AND PARTICIPATING IN ASSESSMENT MISSIONS FOR THE ENERGY ASSESSMENTS DIVISION. WE WOULD THEREFORE BE GRATEFUL IF YOU WOULD ASSIST DR. PRASAD IN OBTAINING APPROPRIATE VISAS FOR THE FOLLOWING COUNTRIES COLON AUSTRALIA, NEW ZEALAND, PAPUA/NEW GUINEA, FIJI, TONGA, WESTERN SAMOA AND VANUATA. DR. PRASAD WILL BE CONTACTING YOU DIRECTLY IN EARLY JANUARY, REGARDS, AHMED, ACTING CHIEF, ENERGY ASSESSMENTS DIVISION, ENERGY DEPARTMENT, WORLD BANK.

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SUBJECT: <b>PRASAD: Visas</b>		DRAFTED BY: <b>GTStout:mt</b>	EXTENSION: <b>72583</b>
CLEARANCES AND COPY DISTRIBUTION: <b>cc: N. B. Prasad</b>		AUTHORIZED BY (Name and Title): <b>M. Ahmed, Acting Chief, EGYEA</b>	
		DEPARTMENT: <b>Energy</b>	
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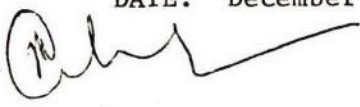
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## OFFICE MEMORANDUM

TO: Distribution

DATE: December 21, 1983

FROM: Masood Ahmed, Acting Chief, EGYEA SUBJECT: PAPUA NEW GUINEA: Energy Sector Management Program:  
Report on the Institutional Strengthening of the  
Department of Minerals and Energy

You will recall that the above report was circulated for comments on December 9, 1983. The principal comment received from a number of staff related to the need for a self-contained and somewhat longer executive summary which would provide policymakers in PNG and officials of prospective donor agencies with a gist of the report and its main conclusions and recommendations. At the same time it was recognized that the text of the main report should be left in its comprehensive detailed form to assist technical level staff in DME in following up on the proposed program of action to implement the recommended measures.

This executive summary has been prepared and is attached for your review. There will be a meeting to discuss this summary on December 23rd at 10:30 a.m. in room D-458. Should you wish to attend the meeting please contact Ziad Alahdad on extension 7-5272.

Attachment.


Distribution:

Messrs. Golan, Beach/Aguilar (AEP); Dutt/Berlin (AEA); Boehm (IND);  
Rao, McCarthy, Palmer, Mulckhuyse (EGY)  
Mesdames: Haug (IND); Vedavalli (EGY)

ZAlahdad:llh

## OFFICE MEMORANDUM

TO: Distribution December 20, 1983

FROM: Masood Ahmed, Deputy Chief, EGYEA 

SUBJECT: Discussion of Kenya Power System Efficiency Study

1. I thought that it would be useful to set out briefly some questions that we might address during our discussion of the above study, scheduled for 2:30 p.m. on Wednesday, December 21. You may, of course, have additional issues that we ought to discuss.

2. A bit of background. You will recall that this work was first started under a UNDP loss reduction project which attempted to apply to specific countries the methodology developed under a Bank research project and summarized in Energy Department Paper No. 6 (Energy Efficiency Optimization of Electric Power Distribution System Losses). Under that UNDP project we carried out loss reduction studies in Zimbabwe, Panama and Sri Lanka. While we learned a lot from that effort (and were able to benefit from this in that the Sri Lanka study is substantially better than Zimbabwe), by June 1983 we were still not very happy with the results and direction of this work. The basic concerns were:

- (i) high cost - the Sri Lanka study cost between \$120 - 150,000. This was due to (a) high overheads (separate project management); (b) extensive use of computer simulation which added to time and money.
- (ii) applicability and usefulness of computer simulation - we discovered that much of the input data required for this was not available (load flows on individual circuits, etc.); therefore, the computer analysis of sample circuits was based on "guestimates" which would have to be reworked before any actual circuit improvements were made. The main benefit of the computer analysis (particularly in the field) was to add credibility to the results and to demonstrate how to use this technique which we all agree would need to be used in the actual distribution rehabilitation program.
- (iii) clarity of definition for the subsequent work required - while the studies produced TOR's for the subsequent work, a detailed plan of action of what steps needed to be taken, by whom, when, how, and at what cost was still missing.

3. These concerns related mainly to the distribution and transmission side of the work. The audits of generating plant efficiency, which had been added after Zimbabwe, were producing specific, clear, and seemingly highly useful recommendations. For the evaluation of non-technical



losses, while it had become clear that this was an important issue, and the Sri Lanka study addressed it to some extent, there was still considerable room for improvement, particularly in spelling out the steps to embark on a comprehensive effort to reduce these losses.

4. After the UNDP project ended in June 1983, we carried out two power efficiency audits under the ESMP--Kenya and Sudan. For these studies, the generation part has remained unchanged with the exception that the follow-up required has been costed and specified in greater detail. However, for the analysis of transmission and distribution, losses we have adopted a very different approach in an attempt to address some of the above concerns. In effect, there has been no computer simulation of any sample circuits. Rather the estimate of benefits and costs for the various measures - capacitor installations, reconductoring, etc -- has been made through judgemental analysis of the system based on data gathered by the mission through visits to substations, field inspections and discussions with utility staff. The basic objectives have been (a) to demonstrate through this analysis, the expected high profitability of embarking on a loss reduction program (b) to specify what steps are needed to embark on this program by providing detailed terms of reference for the subsequent work, and (c) to provide a preliminary conservative estimate of the materials and equipment required for the first phase of the program.

5. I believe that the Kenya report meets these objectives to a large extent, but I am concerned about the reliability of the results. Obviously there will be a large margin of error attached to this type of preliminary analysis and normally this would not be a cause of much concern given the extraordinarily large benefit cost ratios that are being identified. However, we need to be sure of the following:

- (i) Is the margin of error likely to be so large that the subsequent detailed engineering could make this report look silly?
- (ii) Is there likely to be a systematic bias in the economics? Can we build in a systematic downward bias to be conservative?
- (iii) Are any of the measures subject to more uncertainty than the others? Should we treat these differently and/or specify them?
- (iv) Would the margin of error be reduced by using some computer simulation even based on guestimates for input data? Would the additional cost of the minimum required amount of computer analysis be justified by the increased accuracy?
- (v) Does the uncertainty relate only to the estimate of benefits, or also to the estimated requirements for materials and equipment? Should we recommend two phases of investments: immediate and justified vs. probable, but to be verified? Or should we only include the first phase.

My concern about reliability is partly a reflection of the excessively seat-of-the-pants approach of Mr. Collette, the consultant who was involved with the Kenya study. But we need to verify whether a different and better choice for future studies would be an adequate safeguard against this problem. We also need to decide whether, and how we are going to tackle the issue of non-technical losses in future studies. I am convinced that this is a crucial issue in many countries, but I am also coming to the conclusion that this cannot generally be analyzed effectively by the same distribution expert who is responsible for the analysis of technical losses.

Conclusion

The basic objective of our meeting is to determine how to proceed with future work in power system efficiency under the ESMP in the light of our experience to date. To what extent can the Kenya study serve as a model for future ones and what changes in approach/analysis/presentation/strategy are required to improve the quality and relevance of this work. My own view is that (a) this work is extremely worthwhile, (b) that Kenya provides a good starting point, but one needs to get a different, more analytical and economics oriented engineer to carry out the work, and (c) that in some countries, the team should include an "expert" on non-technical losses. I also suspect that the return of a limited amount of computer simulation would be warranted in some cases, but I am not sure whether this is feasible and in what circumstances it would be warranted.

MAhmed:ls

Distribution: Messrs. Rao, Wackman, Fish, Moore, Albuoy, Newcombe

cc: Mr. Rovani



December 19, 1983

Miss M. T. Neville-Rolfe  
Projects and Export Policy Division  
Department of Trade and Industry  
1 Victoria Street  
London SW 1

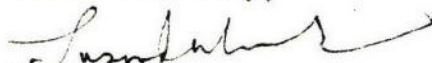
Dear Miss Neville-Rolfe:

During discussions with you and your colleagues earlier this year, Julian Bharier promised that we would provide you with periodic reports on the use of British consultants under the joint UNDP/World Bank Energy Assessments and Sector Management Programmes. I am pleased to attach for your information the first of these reports covering the period January-December, 1983. As you will note, during this year eleven British consultants participated in energy assessments and sector management programme activities. The total expenditure for these consultant assignments was almost \$206,000 of which \$139,000 was for professional fees and the remainder for airfare and subsistence expenses. During 1984, we expect a significant increase in the number and value of consulting assignments as the initial level of activity under the Energy Sector Management Programme expands to cover a number of priority areas which have been identified by the various assessment reports.

I hope that the attached information will be useful for you. Please do not hesitate to contact me if you need any clarification.

With best wishes for the new year,

Yours sincerely,



Masood Ahmed  
Acting Division Chief  
Energy Assessments Division  
Energy Department

Attachment.



# Record Removal Notice

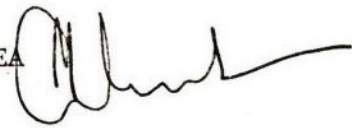
<b>File Title</b> Masood Ahmed - Chronological File - July to December 1983		<b>Barcode No.</b>  1540558
<b>Document Date</b> 12/19/1983	<b>Document Type</b> Report	
<b>Correspondents / Participants</b>		
<b>Subject / Title</b> British Consultants Who Participated in Energy Assessment and Energy Sector Management Program Activities From January 1 to December 1983		
<b>Exception(s)</b> Personal Information		
<b>Additional Comments</b>		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.
		<b>Withdrawn by</b> Bertha F. Wilson
		<b>Date</b> November 2022



Chron

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION  
**OFFICE MEMORANDUM**

DATE December 16, 1983  
TO Mr. George Whiticker, LAO  
FROM ✓ Masood Ahmed, Acting Division Chief, EGYEA  
EXTENSION 74544  
SUBJECT Budget transfers



Please transfer the following UNDP staff from  
INT 80/009 to INT 83/005, effective January 1, 1984:

Mrs. R. Owen  
Messrs. A. Armarquaye  
M. Mitchell

Thank you for your assistance in this matter.

cc: Mrs. Owen  
Messrs. Armarquaye  
Mitchell

December 15, 1983

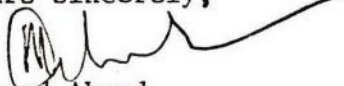
Mr. Gilles Bouchard  
Chief, Energy Sector  
Infrastructure Division  
Canadian International  
Development Agency  
Hull, Quebec  
Canada  
K1A 0G4

Dear Gilles:

Thank you for your letter of December 6, 1983. I am sending, under separate cover, one copy of the eight support record documents of the Solar Pumping Study by Halcrow.

Best regards.

Yours sincerely,



Masood Ahmed  
Acting Division Chief  
Energy Assessments Division  
Energy Department





INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

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

Area Code 202 • Telephone - EXecutive 3-6360 • Cable Address - INTBAFRAD

December 15, 1983

Mr. C. Proctor  
Windmill Road  
Haddenham, Aylesbury  
Buckinghamshire HP17 8JB  
United Kingdom

Dear Mr. Proctor:

Thank you for your letter of November 25, 1983. As requested by you, I am sending under separate cover a set of available Energy Assessments reports and adding your name to our mailing list for future copies.

Yours sincerely,

Masood Ahmed  
Acting Division Chief  
Energy Assessments Division  
Energy Department

November 28, 1983

Mr. Rutherford M. Poats  
Chairman  
Development Assistance Committee  
OECD  
Paris, France

Dear Mr. Poats:

Let me first of all thank you for your very kind comments on the contribution that I was able to make during the DAC energy meetings of October 13-14. In my view this was an extremely useful meeting during which we were able to cover a great deal of ground in the whole area of improving inter-agency cooperation and facilitating the implementation of priority investment and technical assistance projects in the developing countries.

Turning to the letter you sent on November 7 to the DAC members I agree with you that it would be useful to examine whether and how we can get around the institutional and budgetary rigidities which appear to be slowing down the response of various assistance agencies -- including the Bank -- to the opportunities identified by the Energy Assessment and Sector Management Programmes. The options you outline in your letter are certainly feasible and we would have no difficulty with any of them.

Specifically, we think that the first two options should be both useful and administratively feasible because in many cases a tentative allocation for "energy" (in either sectoral or country budgets) is made well before specific projects are defined to utilize it. The main issue is to ensure that the timing of these allocations is in accordance with that of the assessments and subsequent follow-up. To facilitate this, we would be willing to provide donor agencies with a more detailed set of schedules for the completion of ongoing and planned assessments, and to update these on a regular basis.

Regarding the preliminary briefing of aid agencies on the findings of specific assessments, we are reluctant to make a general practice of this because of the sensitivity of the recipient governments. However, in a number of cases the recipient governments have agreed to or encouraged the assessment missions to provide this type of informal feedback to the local representatives of interested donor agencies. This sort of informal briefing can certainly continue where governments are amenable to the idea.

Finally, we agree that the allocation of adequate local resources for follow-up to the assessment is a good indicator of the degree of commitment that a particular government has to the assessment or sector management effort. As you know, an adequate degree of commitment is one of the principal criteria used in selecting countries

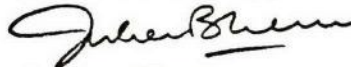


for energy assessment work and we will continue to place emphasis on this.

I hope these comments are useful to you and I look forward with great interest to the ideas that may emerge from other agencies in response to your letter.

Best regards.

Yours sincerely,

A handwritten signature in cursive script, appearing to read "Julian Bharier".

Julian Bharier

Chief, Energy Assessments Division

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MR. A. BOBE, OFFICE OF THE PRESIDENT AND CABINET, ECONOMIC  
 PLANNING DIVISION, LILONGWE, MALAWI. REFERENCE DRAFT REPORT ON  
 INSTITUTIONAL STRENGTHENING OF THE ENERGY SECTOR. FURTHER TO OUR  
 TELEX OF NOVEMBER 17, 1983 WE ARE REVISING THE DRAFT OF THE ABOVE  
 REPORT. FOR CLARIFICATION WE WOULD BE GRATEFUL FOR YOUR DEFINITION  
 OF POINT TWO, BBB IN YOUR TELEX OF NOVEMBER 16. THIS RELATES TO  
 THE CURRENT GOM TERMINOLOGY FOR THE ENERGY UNIT AND THE SUGGESTED  
 OFFICERS. AS SOON AS WE HAVE RECEIVED THE ABOVE INFORMATION WE  
 WILL COMPLETE THE REVISION TO THE DRAFT. REGARDS, MASOOD AHMED,  
 ENERGY DEPARTMENT, INTBAFRAD.

END  
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INFORMATION BELOW NOT TO BE TRANSMITTED

CLASS OF SERVICE:	<b>TELEX</b>	TELEX NO.:	<b>4389 PRES MI</b>	DATE:	<b>11/28/83</b>
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SUBJECT:	<b>ESMP-Malawi</b>	DRAFTED BY:	<b>HAnsari:aaf</b>	EXTENSION:	<b>74545</b>
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CLEARANCES AND COPY DISTRIBUTION:  cc and cleared with: Mr. Hall (EA1) cc: Mr. Bharier (o/r); Ahmed (o/r) (EGYEA)	AUTHORIZED BY (Name and Signature): <b>Robin Bates, Actg. Division Chief, EGYEA</b>
	DEPARTMENT:

SECTION BELOW FOR USE OF CABLE SECTION	
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November 28, 1983

DC:

For your meeting with Helen Hughes on December 1-2 you could give her:

- (i) October Status Report for outside dissemination (copy attached) which shows the various "products" of the ESMP.
- (ii) The December 1 Internal Status Report which provides more details on each activity and should give her better flavor of cost, timing, etc. (copy attached).
- (iii) A couple of sample project profiles for the larger activities which we could cofinance with Australians (attached).
- (iv) Some sample products - suggested ones would be PNG Status Report, Malawi Tobacco Curing Report and Sri Lanka Power Loss Reduction Report. Copies are attached.

Regarding financing, the basic alternatives are:

- contribution to the program which would have to be untied by procurement but could be designated for work in specific groups of countries. We would provide "best efforts" assurances on procurement as for other donors;
- cofinancing of specific larger projects where tied procurement may be acceptable, but subject to reservations we discussed;
- allocation of a sum of funds in Australian bilateral programs for countries where Assessments/ESMP activities are ongoing/planned to follow up on the recommendations of these activities. The benefit would be that in certain countries we would know that the outputs of Assessments/ESMP would be picked up by someone without the delay caused by budgetary lead times in those agencies.

Hope this is useful.

Masood Ahmed

Attachments

## OFFICE MEMORANDUM

To: Distribution

Date: November 22, 1983

From: Masood Ahmed, Deputy Div. Chief, EGYEA

Subject: KENYA: Power System Efficiency Study

1. Attached please find, for your review and comments, a copy of the above study which has been prepared by Messrs. A. L. Banks and H. B. Collette on the basis of a September 1983 mission. Following your review and clearance, the draft will be sent to the Government of Kenya and the Kenya Power and Light Company for their clearance before it is finalized and distributed under the Energy Sector Management Program.

2. Regarding timing, a mission has been tentatively scheduled to visit Kenya for December 5-10 to follow-up on other ESMP activities. It would be useful for this mission to be able to take out the draft of the above report for the Government, and to obtain their comments on it while in the field. Therefore, your comments/clearance of the attached version by cob November 29 would be much appreciated. Please send these to Mr. Fish (E-532) or Mr. Newcombe (D-447).

Attachment.

Distribution:

Messrs. Gulhati (EANVP); Bronfman, Wackman (5), Gusten (EAP);  
Dunn (3), Kohli, Gamba (IND);  
Rovani, Rao, Bourcier, Sheehan, Sadove, Fish, Dosik, Heron,  
Saunders, Iskander, Kalim, Bates, Newcombe (EGY).

cc and cleared with: Mr. Bharier (EGYEA)


MAhmed:aaf.



INTERNATIONAL FINANCE CORPORATION  
OFFICE MEMORANDUM

To: Distribution

Date: November 22, 1983

From: Julian Bharier, Chief, EGYEA 

Subject: MALAWI: Technical Assistance Package to Improve the Efficiency of Fuelwood Use in the Tobacco Industry

Attached please find a copy of the final version of the above study which has been prepared under the Energy Sector Management Program. You may be interested to know that the pilot project for barn improvements and the associated package of technical assistance identified by this study is to be financed under the Bank's Second Technical Assistance Credit for Malawi which is to be submitted to the Board in January 1984.

Attachment.

Distribution:

Messrs. Wapenhans, Gulhati, (EANVP); Sandberg (EANEM);  
Wyss, Bronfman, Christoffersen, Senner, Wackman, Schramm,  
Gusten (EAP);  
Kraske, Messenger, Tuncer, Hall (EA1); Loos (RMEA);  
Rajagopalan (PAS); Yudelman (AGR);  
Dewey, Kohli, Gamba (IND);  
Richardson (CDD); Alizai, Dixon (CA2);  
Rovani, Rao, Sheehan, Sadove, Bourcier, Fish, Dosik,  
Heron, Saunders, Iskander, McCarthy, Kalim, Ahmed,  
Bates (EGY);  
Mashler, Harland, Cox (3) (UNDP, New York)

cc: EGYEA Staff - attachment available.

MAhmed:aaf.

## BURUNDI

### Energy Assessment Status Report Petroleum Supply Management Study

Being reviewed by Region prior to transmittal to Government. French versions being fixed and will go to Ms. Monceaux next week (Maryellen handling). No action required until Noel's return 12/5.

## KENYA

### Power Loss Reduction Study

Sent to region for comments/clearance by 11/29. Then needs to be finalized for distribution to Government. If Government accepts Ken's mission scheduled for 12/7, he will take report out with him. Angelica will organize. Technical comments can be incorporated by Jim Fish.

Ken's mission will also clear status report. He is following up directly with Programs. No action required by RB/JB.

## MALAWI

Floor's mission tentatively scheduled for 12/12-20 to supervise fuelwood TA project. Awaiting Government clearance.

Ansari has revised status report which should go out to Front Office/Regions for review. Cover memo and distribution similar as for Zimbabwe EASR which Kwei has copy of.

## RWANDA

Noel has to complete EASR which he will do upon return from Niger 12/5. No action required.

## ZIMBABWE

### Energy Assessment Status Report.

Has been reviewed by Region. Now has to be cleared by Programs for sending to Government. Kwei has info and cover memo. No additional action required.

## SUDAN

### Power Efficiency Report.

On hold as needs extensive revision. If Huda can't go to Sri Lanka then she might work on it (material is on top shelf in my office) using Kenya study as model. But best not to send out till I return or until Robin has reviewed and cleared.



BANGLADESH

Matthew should prepare EASR upon return 11/28. If ready before I return and cleared by RB/JB, should go to Region/Front Office for review.

HAITI

Ursula and Noel scheduled to go there 12/12-18. Government has cleared mission. Ursula needs to clear with Programs (who have agreed in principle).

PNG

Prasad due 12/5 to finalize Institutional Review Report with Ziad. Report needs to be discussed with Front Office and Regions during Prasad's stay. Ziad will organize but may need support on typing as report is long and time short.

Electricity Tariffs Study. Ziad is handling.

OTHER MATTERS

Quarterly Status Report - going out today. Helen Hughes' visit December 1-2. D.C. will have background material which Angelica is putting together.

## OFFICE MEMORANDUM

To: Distribution

Date: November 22, 1983

From: Masood Ahmed, Deputy Div. Chief, EGYEA

Subject: KENYA: Power System Efficiency Study

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Attachment.

Distribution:

Messrs. Gulhati (EANVP); Bronfman, Wackman (5), Gusten (EAP);  
Dunn (3), Kohli, Gamba (IND);  
Rovani, Rao, Bourcier, Sheehan, Sadove, Fish, Dosik, Heron,  
Saunders, Iskander, Kalim, Bates, Newcombe (EGY).

cc and cleared with: Mr. Bharier (EGYEA)

MAhmed:aaf.



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(1) MR. A. BOBE  
 OFFICE OF THE PRESIDENT AND CABINET  
 ECONOMIC PLANNING DIVISION  
 LILONGWE, MALAWI  
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(2) MR. J. PHIRI  
 MINISTRY OF FINANCE  
 LILONGWE, MALAWI  
 TELEX NO.

(3) MR. PHOYA  
 MINISTRY OF FORESTRY  
 AND NATURAL RESOURCES  
 LILONGWE, MALAWI  
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MR. BOBE, OFFICE OF THE PRESIDENT AND CABINET, ECONOMIC PLANNING  
 DIVISION, LILONGWE, MALAWI. (AAA) RE YOUR TELEX OF NOVEMBER 15,  
 1983. THANK YOU FOR YOUR COMMENTS ON THE DRAFT OF THE ENERGY  
 ASSESSMENT STATUS. WE ARE REVISING THE DRAFT IN THE LIGHT OF YOUR  
 COMMENTS BEFORE DISTRIBUTING IT IN FINAL FORM UNDER THE ENERGY  
 SECTOR MANAGEMENT PROGRAM. (BBB) RE INSTITUTIONAL FRAMEWORK  
 STUDY. HAVE RECEIVED YOUR SECOND TELEX COMMENTING ON THE DRAFT  
 REPORT. WE WILL INCORPORATE THESE COMMENTS AND REVISE THE REPORT.  
 PLEASE LET ME KNOW IF YOU WOULD LIKE TO REVIEW REVISED DRAFT  
 BEFORE IT IS DISTRIBUTED IN FINAL. (CCC) REGARDING THE TOBACCO  
 INDUSTRY ENERGY EFFICIENCY STUDY. AS WE AGREED ON THE PHONE, THAT  
 STUDY HAS NOW BEEN FINALIZED AND ARE SENDING YOU COPIES THROUGH  
 THE UNDP RESIDENT OFFICE IN LILONGWE. WE HAVE DISCUSSED THE FOLLOW  
 UP TO THAT REPORT WITH MESSRS. MPHANDE AND LIPATO IN WASHINGTON  
 AND WITH THEIR CONCURRENCE WE WOULD LIKE TO PROPOSE A MISSION BY  
 MR. WILLEM FLOOR, ENERGY PLANNER, FOR THE PERIOD OF DECEMBER 12-20.  
 THE PURPOSE OF MR. FLOOR'S MISSION WOULD BE TO DISCUSS THE REPORT'S  
 FINDINGS AND FOLLOW UP WITH THE VARIOUS AGENCIES INVOLVED AND TO  
 DEFINE THE INSTITUTIONAL ARRANGEMENTS AND SCHEDULE OF IMPLEMENTA-  
 TION FOR THE FOLLOW UP PILOT PROJECT WHICH IS TO BE FINANCED UNDER

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MR. E. FOSSATI, HEAD OF DIVISION, COMEUR, BRUSSELS, BELGIUM.  
RE FEASIBILITY STUDIES FOR ENERGY PROJECTS IN RURAL AREAS OF  
SELECTED NON-ASSOCIATED DEVELOPING COUNTRIES. THANK YOU FOR  
YOUR TELEX OF NOVEMBER 16. IT APPEARS THAT OUR LETTER OF NOVEMBER  
7 ENCLOSING SOME PROJECT PROPOSALS HAS NOT REACHED YOU AS YET.  
WE ARE SENDING A DUPLICATE SET TODAY BY COURIER AND LOOK FORWARD  
TO RECEIVING YOUR COMMENTS. REGARDS. JULIAN BHARIER, CHIEF,  
ENERGY DEPARTMENT, INTBAFRAD.

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CLASS OF SERVICE:	<b>TELEX</b>	TELEX NO.:	<b>21877 COMEU B</b>	DATE:	<b>11/16/83</b>
SUBJECT:	<b>ESMP-donor</b>	DRAFTED BY:	<b>MAHmed:aaf.</b>	EXTENSION:	
CLEARANCES AND COPY DISTRIBUTION:		AUTHORIZED BY (Name and Signature): <b>Julian Bharier, Chief, EGYEA</b>			
		DEPARTMENT: <b>Energy</b>			
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WHEN REPLYING TO THIS MESSAGE REFER TO : TCP FCA  
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DE : C.C.E. BRUXELLES - TLX1 - SERVICE TELEX  
A : INBAFRAD WORLD BANK - WASHINGTON  
REF: 07:54 17-11-83 000108237 - 000138283

TELEX NO 193542-VIII = R E P E T I T I O N =

44098 WORLD BANK, WASHINGTON D.C., U.S.A.  
ATTN: DR. JULIAN BHARIER, CHIEF OF ENERGY ASSESSMENTS DIVISION.

OUREF: VIII/D/3/25179

SUBJECT: FEASIBILITY STUDIES FOR ENERGY PROJECTS IN RURAL AREAS  
OF SELECTED NON-ASSOCIATED DEVELOPING COUNTRIES.

WITH REFERENCE TO YOUR TELEX OF 25 OCTOBER, PLEASE NOTE:

- A) WE LOOK FORWARD TO RECEIVING SPECIFIC PROJECT PROPOSALS.
  - B) WE ARE IN AGREEMENT WITH THE SUGGESTED ARRANGEMENTS. THE ACTUAL CONTRACTING OF THE CONSULTANTS AND THE ADMINISTRATION OF THEIR CONTRACTS COULD BE UNDERTAKEN BY THE COMMISSION, PROVIDED ALL THE PREVIOUS PREPARATIONS (TOR, SELECTION, ETC.) AND THE MONITORING (INCLUDING FIELD SUPERVISION, REVIEW OF REPORTS, ETC.) ARE PROVIDED BY YOU. HOWEVER, WE WOULD NEED TO BE KEPT INFORMED AT THE VARIOUS STAGES, ESPECIALLY ABOUT THE REASONS FOR THE SELECTION OF THE CONSULTANTS.
  - C) IN ACCORDANCE WITH THE GENERAL RULES OF THE EEC, THE ELIGIBLE FIRMS ARE THOSE FROM MEMBER STATES, FROM THE RECIPIENT AND FROM OTHER BENEFICIARY COUNTRIES (OF THE SAME REGIONAL GROUP RECEIVING EEC AID UNDER THE SAME PROGRAMME). NEVERTHELESS, IN THE CASE OF TECHNICAL ASSISTANCE, THE USE OF NON-EUROPEAN FIRMS COULD BE MORE DIFFICULT TO JUSTIFY.
- KIND REGARDS

E. FOSSATI  
HEAD OF DIVISION  
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MR. AYARI, CHAIRMAN, BADEA, KHARTOUM, SUDAN. (AAA) IN YOUR DIS-  
CUSSIONS WITH MR. KNOX IN SEPTEMBER, YOU MENTIONED THAT BADEA HAS  
ALLOCATED SOME FUNDS FOR FINANCING FEASIBILITY STUDIES AND OTHER  
TECHNICAL ASSISTANCE AND YOU ASKED FOR THE BANK'S ASSISTANCE IN  
IDENTIFYING PRIORITY PROJECTS TO UTILIZE THESE FUNDS. TO FOLLOW  
UP ON YOUR REQUEST, I WOULD LIKE TO BRING TO YOUR ATTENTION THE  
TECHNICAL ASSISTANCE AND PRE-INVESTMENT WORK THAT IS BEING CARRIED  
OUT IN THE ENERGY SECTOR UNDER THE JOINT UNDP/WORLD BANK ENERGY  
SECTOR MANAGEMENT PROGRAM (ESMP). WE BELIEVE THAT THIS PROGRAM  
OFFERS A VARIETY OF OPPORTUNITIES FOR COLLABORATION WITH BADEA IN  
CARRYING OUT THE TYPE OF ACTIVITIES THAT YOU HAD DISCUSSED WITH  
MR. KNOX. (BBB) THE OBJECTIVE OF THE ESMP IS TO PROVIDE TECHNICAL  
AND MANAGERIAL ASSISTANCE TO DEVELOPING COUNTRIES TO HELP THEM  
IMPLEMENT PRIORITY INVESTMENT AND POLICY OPTIONS IN THE ENERGY  
SECTOR. IN GENERAL, THESE OPTIONS HAVE THEMSELVES BEEN IDENTIFIED  
BY A COUNTRY ENERGY SECTOR ASSESSMENT STUDY WHICH IS ALSO CARRIED  
OUT BY OUR STAFF UNDER ANOTHER JOINT PROGRAM WITH UNDP. TO DATE,  
ENERGY ASSESSMENT MISSIONS HAVE VISITED 35 COUNTRIES AND FINAL  
ASSESSMENT REPORTS HAVE BEEN ISSUED FOR 21 OF THESE COUNTRIES.  
THERE IS CONSIDERABLE EVIDENCE TO SHOW THAT BOTH THE GOVERNMENTS

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CONCERNED AND THE INTERNATIONAL DONOR COUNTRY ARE UTILIZING THE ANALYSIS AND RECOMMENDATIONS OF THE ASSESSMENTS IN FORMULATING THEIR ENERGY POLICY, INVESTMENT AND ASSISTANCE STRATEGIES. (CCC) HOWEVER, IT HAS ALSO BECOME CLEAR THAT FOR MANY OF THE INVESTMENT AND POLICY OPTIONS IDENTIFIED IN THE ASSESSMENTS, FURTHER PREFEASIBILITY OR PROJECT DEFINITION WORK IS REQUIRED BEFORE THEY CAN BE PICKED UP BY PRIVATE INVESTORS OR OFFICIAL FINANCING AGENCIES. IT IS TO CARRY OUT THIS WORK THAT THE ESMP WAS STARTED IN MARCH 1983. CURRENTLY, THERE ARE ABOUT TWO DOZEN INDIVIDUAL TECHNICAL ASSISTANCE ACTIVITIES UNDERWAY IN THE ESMP. MOST OF THEM ARE QUITE SMALL (ABOUT USDOLLARS 50,000 EACH) AND THEY ARE ALSO DESIGNED TO CLEARLY JUSTIFY AND DEFINE THE SCOPE OF FURTHER INVESTMENT WORK. AS AN EXAMPLE, A USDOLLARS 60,000 ESMP PREFEASIBILITY STUDY OF THE POTENTIAL FOR IMPROVING THE EFFICIENCY OF ENERGY USE IN THE TOBACCO CURING INDUSTRY IN MALAWI HAS IDENTIFIED A USDOLLARS 350,000 PILOT PROJECT WHICH WILL IMPLEMENT THE FIRST PHASE OF AN ENERGY EFFICIENCY IMPROVEMENT PROGRAM. OTHER EXAMPLES ARE POWER SECTOR EFFICIENCY AUDITS WHICH HAVE IDENTIFIED SPECIFIC INVESTMENT AND REHABILITATION MEASURES WITH HIGH RATES OF RETURN AND QUICK PAYBACKS IN COUNTRIES LIKE KENYA, SUDAN AND

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CLASS OF SERVICE:		TELEX NO.:		DATE:	
SUBJECT:			DRAFTED BY:		EXTENSION:
CLEARANCES AND COPY DISTRIBUTION:			AUTHORIZED BY (Name and Signature):		
			DEPARTMENT:		
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APPLICATION

MESSAGE NUMBER

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7-2285

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SRI LANKA. (DDD) WHILE THE ESMP IS EXECUTED BY THE BANK, ITS OUT-  
 PUT IS AVAILABLE TO ALL FINANCING AND ASSISTANCE AGENCIES.  
 MOREOVER, THE PROGRAM IS FINANCED IN PART BY CONTRIBUTIONS FROM A  
 NUMBER OF DONOR COUNTRIES AS WELL AS FROM THE BANK AND THE UNDP'S  
 OWN RESOURCES. DONOR AGENCIES CAN ALSO COLLABORATE WITH US BY  
 COFINANCING SPECIFIC PROJECTS UNDER THE ESMP WHICH OUR STAFF ARE  
 WILLING TO PREPARE AND SUPERVISE. (EEE) IT APPEARS TO US THAT THIS  
 PROGRAM OFFERS AN EXCELLENT OPPORTUNITY FOR OUR TWO AGENCIES TO  
 COLLABORATE IN AN IMPORTANT AREA. IF YOU WOULD LIKE TO DISCUSS  
 THIS POSSIBILITY FURTHER, THE STAFF RESPONSIBLE FOR THIS PROGRAM  
 WOULD BE HAPPY TO MEET WITH YOU IN KHARTOUM AT A MUTUALLY CON-  
 VENIENT TIME. (FFF) I LOOK FORWARD TO HEARING FROM YOU ON THIS  
 MATTER. REGARDS. YVES ROVANI, DIRECTOR, ENERGY DEPARTMENT,  
 INTBAFRAD

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CLASS OF SERVICE: <b>TELEX/FR</b>		TELEX NO.:	DATE: <b>Nov. 18/83</b>
SUBJECT: <b>ESMP - Gen.</b>		DRAFTED BY: <b>MAHmed:ks</b>	EXTENSION: <b>7-4545</b>
CLEARANCES AND COPY DISTRIBUTION: <b>Cleared with &amp; cc: Mr.Knox, WANVP cc: Messrs. Ahmed &amp; Bharier (EGYEA)</b>		AUTHORIZED BY (Name and Sig): <b>Yves Rovani, Director, EGY</b>	
		DEPARTMENT: <b>ENERGY</b>	
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FORM NO. 75  
(6-83)

THE WORLD BANK/IFC

ROUTING SLIP		DATE: November 15, 1983	
NAME		ROOM NO.	
Mr. D. Strombom, PPDP		D-1000	
Mr. M. W. Dickerson, PPDP		D-1007	
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:			
I would appreciate your comments on the attached draft. You may recall that we discussed this question some time ago.			
FROM:	ROOM NO.:	EXTENSION:	
Masood Ahmed 	D-449	74545	

# OFFICE MEMORANDUM

To: Mr. Julian Bharier, Chief, EGYEA

Date: November 14, 1983

From: Masood Ahmed, EGYEA



Subject: Cofinancing Procedures for ESMP

1. I met with Messrs. Vibert and Kiermayr of the Cofinancing Advisory Unit to seek their advice on the above matter. As you know, this meeting had been prompted by the expressions of interest in cofinancing specific ESMP projects by the Finns and the EEC, as well as the prospect of similar offers by other donor agencies. The basic question is whether the Bank can accept (if these agencies so wish) to have their contributions to individual projects tied to the procurement of services and equipment from their country (or countries in the case of the EEC). A related issue is the extent to which the Bank should get involved in the administration of such tied financing if requested to do so.
2. Messrs. Vibert and Kiermayr told me that these matters had been treated in an ad hoc manner to date and a task force was about to be set up to prepare a set of comprehensive Bank-wide guidelines on them. However, as the schedule for the task force's work is still unclear, they recommended that we proceed in the interim on the basis of the Bank's accumulated experience.
3. On this basis, the recommended approach is as follows:
  - (i) The Bank would take full responsibility for designing and executing the projects. In financing these projects the Bank would obviously prefer its cofinanciers to provide untied funds, but would recognize their constraints and is willing to accept cofinancing which is tied to procurement by origin.
  - (ii) In cases where such cofinancing is tied, our strong preference is for the cofinancing agency to take the responsibility for administering those funds and for recruiting the consultants (selected by ESMP staff) or procuring equipment directly. However, we would be willing to provide technical support for, and supervision of, those consultants; this would include preparing terms of reference, helping to identify and evaluate consultants, supervising their work in the field and reviewing their reports. In practice, this means that we would do everything but the actual contracting and fund administration.
  - (iii) However, in exceptional cases the Bank is willing to take over the responsibility for the actual administration of tied cofinancing funds. There must be a strong justification for this -- such as the demonstrated



inability of the agency to administer the funds or a very strong preference on their part not to do so. Operationally, this means that we would accept this responsibility only if we were satisfied that refusal to do so would jeopardize the cofinancing offer and if we attach a high priority to the task to be financed.

- (iv) Where the Bank does accept responsibility for administering cofinanciers' funds (whether tied or not) we would not generally charge a management fee. The cost of this service would be borne by the Bank's administrative budget. However, we do normally request that the cofinanciers give us authority to invest their funds in an interest bearing account until disbursement. The proceeds of this go to the general Bank budget and help to cover the cost of administering the funds. Generally, cofinancing agencies have no objections to this arrangement.

4. The implications of this for the ESMP are that we should:

- (i) seek cofinancing on an untied basis but be willing to accept tied financing;
- (ii) ask the cofinanciers to administer their share when tied;
- (iii) if they are not willing to do so, consult with Mr. Kiermayr before accepting responsibility for administering tied cofinancing funds.

5. The merits of each case in 4(iii) would have to be judged individually. Messrs. Vibert and Kiermayr both suggested that this could be done at the working level. However, they also recommended that we seek Mr. Stern's approval of the proposed approach at the outset by outlining this in a joint memo from Mr. Kiermayr and ourselves through Messrs. Dherse and Ohuchi. A draft of this memorandum is attached.

6. It is important to note that our meeting did not address the related but separate issue of accepting tied or partially tied contributions for the program as a whole (specifically the 60% tied Canadian contribution that is in the works). We may want to include this point as well in the memo to Mr. Stern.

cc: Messrs. Vibert, Kiermayr (VPCAU)

MAhmed:aaf.

To: Mr. Ernest Stern, SVPOP Date: November 14, 1983  
Through: Messrs. Jean-Loup Dherse (VPEIS), Teruyuki Ohuchi (VPCOF)  
From: Julian Bharier (EGYEA) and Ullrich Kiermayr (VPCAU)  
Subject: Cofinancing Procedures for the Joint UNDP/World Bank Energy Sector Management Program (ESMP)

1. Most of the project definition and prefeasibility studies being carried out by the Energy Assessments Division under the ESMP cost under \$60,000 each and are being financed entirely from ESMP resources, which so far have almost entirely come through the UNDP. However, we have also identified a number of somewhat larger feasibility studies and pilot projects in the \$200,000-500,000 range where we believe the Bank's direct participation would be useful but which cannot be financed from ESMP resources alone. Consequently UNDP and ourselves have explored the possibility of cofinancing these projects with other donor agencies. A number of them -- EEC, Finnida, the Dutch Government and GTZ -- have already responded positively to this idea and others may do so soon. All have indicated that they would be willing to contribute the bulk of the cost of each project (80-90%) in a cofinancing arrangement with the ESMP, (or even a general contribution to the program, i.e. covering a number of pre-agreed projects) as long as ESMP staff were involved in supervising project implementation. However, some of these agencies may wish to tie their contributions to the procurement of consultants and services from their country (or, for the EEC, member countries plus the ACP countries).
2. EIS and COF staff have discussed the question of accepting tied cofinancing for these ESMP operations and have jointly developed the



following guidelines which are consistent with the Bank's experience to date and which are submitted for your approval. These principles are:

- (i) In all discussions with potential cofinanciers, UNDP and ourselves will first seek to obtain untied cofinancing funds.
- (ii) If these are not forthcoming, we will accept cofinancing funds on a tied basis but only after ensuring that there is adequate technical expertise available in the country of procurement for the type of project(s) envisaged. (We are already working on building up a roster of specific expertise in the energy sector in the major donor countries).
- (iii) Where we participate in a tied cofinancing arrangement, we would express a strong preference for the cofinanciers to administer their own funds -- i.e., they would recruit and administer the consultants (approved by ESMP for the project) and other contracts directly. However, we would provide technical supervision of the consultants and review their qualifications and their output.
- (iv) In exceptional circumstances, we would be willing to take on the responsibility for administering tied cofinancing funds, but there would have to be strong reasons to do so. (An example is the possible reluctance of the EEC to become involved in administering consultant contracts for political

reasons.) Before accepting this responsibility, ESMP staff would discuss each individual case with the Cofinancing Advisory Unit and obtain its prior approval.

- (v) In line with previous Bank experience, no management fee would be charged for administering cofinanciers' funds (whether tied or not). However, we would normally insist on the right to invest these funds in an interest-bearing account until disbursed. The interest income would go towards defraying administration costs and would not be added to the funds available for the project.

3. Following your approval, these principles will be applied in finalizing individual cofinancing operations under the ESMP. For all cofinanced projects we would, of course, retain full responsibility for approving project design and implementation as well as the consultants who would carry out the work.

cc & to be cleared with: Messrs. Rovani (EGY), Vibert (VPCAU)

MAhmed:aaf.



November 14, 1983

Mr. Gusten:

Re: Malawi Tobacco Curing

As we discussed, I am attaching for your review the correct final version of the above study.

At the working level review in August, the principal comments made were in the following areas:

- (i) some of the physical conversion factors for wood were incorrect and affected the economic analysis;
- (ii) the economics of the various technical options had not been compared;
- (iii) the package of follow-up work resulting from the mission's findings had not been adequately spelt out;
- (iv) the presentation of the report was poor; there was no summary, considerable extraneous information and the organization of the material could be substantially improved.

These points have been taken into account in extensive revisions to the report. In essence the first draft was written by a technical tobacco curing consultant engineer who was not an economist or a writer. This draft has been rewritten by a staff economist with additional input from the technical experts. Horst Wagner has seen and approved the revised draft.

Please call me if I can clarify further. Also would appreciate your clearance by Monday 21st if possible.

Thanks.



Masood Ahmed

Attachment.


MAhmed:aaf.

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION  
OFFICE MEMORANDUM

chron

To: Messrs. Rovani, Rao, Heron, Ludwig,  
Kalim, Bates (EGY)

Date: November 14, 1983

From: Julian Bharier, Chief, EGYEA 

Subject: Cofinancing under the Energy Sector Management Program

1. I am attaching for your comments two memos: the first from Masood Ahmed to me reporting on recent discussions with Messrs. Vibert and Kiermayr of the Cofinancing Advisory Unit; the second a draft memo to Mr. Stern setting out the principles under which we could accept cofinancing, particularly when this may be tied. As you will see from Masood's memo, this was the approach recommended by Messrs. Vibert and Kiermayr.

2. I would be grateful for your views and will be pleased to arrange a meeting to discuss the subject if this is considered necessary.

Attachments.


cc: Mr. Ahmed (EGY)

JBharier:aaf.



THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION  
OFFICE MEMORANDUM

To: Mr. Julian Bharier, Chief, EGYEA Date: November 14, 1983

From: Masood Ahmed, EGYEA 

Subject: Cofinancing Procedures for ESMP

1. I met with Messrs. Vibert and Kiermayr of the Cofinancing Advisory Unit to seek their advice on the above matter. As you know, this meeting had been prompted by the expressions of interest in cofinancing specific ESMP projects by the Finns and the EEC, as well as the prospect of similar offers by other donor agencies. The basic question is whether the Bank can accept (if these agencies so wish) to have their contributions to individual projects tied to the procurement of services and equipment from their country (or countries in the case of the EEC). A related issue is the extent to which the Bank should get involved in the administration of such tied financing if requested to do so.

2. Messrs. Vibert and Kiermayr told me that these matters had been treated in an ad hoc manner to date and a task force was about to be set up to prepare a set of comprehensive Bank-wide guidelines on them. However, as the schedule for the task force's work is still unclear, they recommended that we proceed in the interim on the basis of the Bank's accumulated experience.

3. On this basis, the recommended approach is as follows:

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(ii) In cases where such cofinancing is tied, our strong preference is for the cofinancing agency to take the responsibility for administering those funds and for recruiting the consultants (selected by ESMP staff) or procuring equipment directly. However, we would be willing to provide technical support for, and supervision of, those consultants; this would include preparing terms of reference, helping to identify and evaluate consultants, supervising their work in the field and reviewing their reports. In practice, this means that we would do everything but the actual contracting and fund administration.

(iii) However, in exceptional cases the Bank is willing to take over the responsibility for the actual administration of tied cofinancing funds. There must be a strong justification for this -- such as the demonstrated

inability of the agency to administer the funds or a very strong preference on their part not to do so. Operationally, this means that we would accept this responsibility only if we were satisfied that refusal to do so would jeopardize the cofinancing offer and if we attach a high priority to the task to be financed.

- (iv) Where the Bank does accept responsibility for administering cofinanciers' funds (whether tied or not) we would not generally charge a management fee. The cost of this service would be borne by the Bank's administrative budget. However, we do normally request that the cofinanciers give us authority to invest their funds in an interest bearing account until disbursement. The proceeds of this go to the general Bank budget and help to cover the cost of administering the funds. Generally, cofinancing agencies have no objections to this arrangement.

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- (ii) ask the cofinanciers to administer their share when tied;
- (iii) if they are not willing to do so, consult with Mr. Kiermayr before accepting responsibility for administering tied cofinancing funds.

5. The merits of each case in 4(iii) would have to be judged individually. Messrs. Vibert and Kiermayr both suggested that this could be done at the working level. However, they also recommended that we seek Mr. Stern's approval of the proposed approach at the outset by outlining this in a joint memo from Mr. Kiermayr and ourselves through Messrs. Dherse and Ohuchi. A draft of this memorandum is attached.

6. It is important to note that our meeting did not address the related but separate issue of accepting tied or partially tied contributions for the program as a whole (specifically the 60% tied Canadian contribution that is in the works). We may want to include this point as well in the memo to Mr. Stern.

cc: Messrs. Vibert, Kiermayr (VPCAU)

MAhmed:aaf.



To: Mr. Ernest Stern, SVPOP Date: November 14, 1983  
Through: Messrs. Jean-Loup Dherse (VPEIS), Teruyuki Ohuchi (VPCOF)  
From: Julian Bharier (EGYEA) and Ullrich Kiermayr (VPCAU)  
Subject: Cofinancing Procedures for the Joint UNDP/World Bank Energy  
Sector Management Program (ESMP)

1. Most of the project definition and prefeasibility studies being carried out by the Energy Assessments Division under the ESMP cost under \$60,000 each and are being financed entirely from ESMP resources, which so far have almost entirely come through the UNDP. However, we have also identified a number of somewhat larger feasibility studies and pilot projects in the \$200,000-500,000 range where we believe the Bank's direct participation would be useful but which cannot be financed from ESMP resources alone. Consequently UNDP and ourselves have explored the possibility of cofinancing these projects with other donor agencies. A number of them -- EEC, Finnida, the Dutch Government and GTZ -- have already responded positively to this idea and others may do so soon. All have indicated that they would be willing to contribute the bulk of the cost of each project (80-90%) in a cofinancing arrangement with the ESMP, (or even a general contribution to the program, i.e. covering a number of pre-agreed projects) as long as ESMP staff were involved in supervising project implementation. However, some of these agencies may wish to tie their contributions to the procurement of consultants and services from their country (or, for the EEC, member countries plus the ACP countries).
2. EIS and COF staff have discussed the question of accepting tied cofinancing for these ESMP operations and have jointly developed the

following guidelines which are consistent with the Bank's experience to date and which are submitted for your approval. These principles are:

- (i) In all discussions with potential cofinanciers, UNDP and ourselves will first seek to obtain untied cofinancing funds.
- (ii) If these are not forthcoming, we will accept cofinancing funds on a tied basis but only after ensuring that there is adequate technical expertise available in the country of procurement for the type of project(s) envisaged. (We are already working on building up a roster of specific expertise in the energy sector in the major donor countries).
- (iii) Where we participate in a tied cofinancing arrangement, we would express a strong preference for the cofinanciers to administer their own funds -- i.e., they would recruit and administer the consultants (approved by ESMP for the project) and other contracts directly. However, we would provide technical supervision of the consultants and review their qualifications and their output.
- (iv) In exceptional circumstances, we would be willing to take on the responsibility for administering tied cofinancing funds, but there would have to be strong reasons to do so. (An example is the possible reluctance of the EEC to become involved in administering consultant contracts for political



reasons.) Before accepting this responsibility, ESMP staff would discuss each individual case with the Cofinancing Advisory Unit and obtain its prior approval.

- (v) In line with previous Bank experience, no management fee would be charged for administering cofinanciers' funds (whether tied or not). However, we would normally insist on the right to invest these funds in an interest-bearing account until disbursed. The interest income would go towards defraying administration costs and would not be added to the funds available for the project.


3. Following your approval, these principles will be applied in finalizing individual cofinancing operations under the ESMP. For all cofinanced projects we would, of course, retain full responsibility for approving project design and implementation as well as the consultants who would carry out the work.

cc & to be cleared with: Messrs. Rovani (EGY), Vibert (VPCAUI)

MAhmed:aaf.

FORM NO. 75  
(6-83)

THE WORLD BANK/IFC

ROUTING SLIP		DATE:
		November 14, 1983
NAME		ROOM NO.
Messrs. Vibert/Kiermayr (VPCAU)		F-718
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:		
The attached memo to Mr. Stern is based on our discussions of last week.		
FROM:	ROOM NO.:	EXTENSION:
Masood Ahmed 	D-449	74545



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INTBAFRAD, DHAKA, BANGLADESH. FOR SCHWARTZ AND MCCARTHY. DUE TO  
 MEDICAL REASONS JOCHEN SCHMEDTJE UNABLE TO PARTICIPATE IN ENERGY  
 ASSESSMENT FOLLOW-UP MISSION. MATTHEW MITCHELL WILL CARRY ON AS  
 PLANNED ARRIVING DHAKA NOVEMBER 15 BY BA 145. MITCHELL WILL BRIEF  
 YOU UPON ARRIVAL REGARDING OBJECTIVES OF HIS VISIT WHICH IS TO  
 PREPARE BRIEF STATUS REPORT ON MAIN SECTOR DEVELOPMENTS SINCE 1981  
 ENERGY ASSESSMENT AND PROGRESS IN IMPLEMENTING THE VARIOUS  
 RECOMMENDATIONS OF THE ASSESSMENT. STATUS REPORT WILL ALSO COVER  
 CURRENT AND PLANNED TECHNICAL ASSISTANCE ACTIVITIES OF BILATERAL/  
 MULTILATERAL DONORS AND WILL OUTLINE AREAS WHERE FURTHER TECHNICAL  
 ASSISTANCE IS REQUIRED SOME OF WHICH COULD BE PROVIDED THROUGH  
 UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM. (BBB) GIVEN  
 SCHMEDTJE'S ABSENCE, WE WOULD APPRECIATE ANY SUPPORT YOU COULD  
 PROVIDE TO MITCHELL DURING HIS MISSION. IN PARTICULAR, IT WOULD  
 BE USEFUL IF GENE COULD JOIN IN ANY WRAP-UP DISCUSSIONS ON  
 MITCHELL'S FINDINGS AS WELL AS TAKING THE LEAD IN LCG MEETING ON  
 OBTAINING FROM THE REPRESENTED AGENCIES THEIR CURRENT AND PLANNED  
 TA PROGRAMS. BEST REGARDS, JULIAN BHARIER, ENERGY DEPARTMENT,  
 INTBAFRAD.

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CLASS OF SERVICE: <b>TELEX</b>		TELEX NO.: <b>642302 IDA BJ</b>	DATE: <b>11/14/83</b>
SUBJECT: <b>ESMP-Bangladesh-Follow-up</b>		DRAFTED BY: <b>MAhmed:aaf</b>	EXTENSION: <b>74545</b>
CLEARANCES AND COPY DISTRIBUTION: <b>cc: Messrs. Choi (ASA)</b> <b>Nayyar (EGYD1)</b>		AUTHORIZED BY (Name and Signature): <b>Julian Bharier, Chief, EGYEA</b>	
		DEPARTMENT: <b>Energy</b>	
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# OFFICE MEMORANDUM

TO: Distribution

DATE: November 10, 1983

FROM: Julian Bharier, Chief, EGYEA



SUBJECT: MALAWI: Tobacco Industry Energy Efficiency Study

Please refer to my memo of November 7, 1983 and the outdated version we erroneously circulated with it. I am now enclosing the current version of the above study for your review and would appreciate receiving your comments by November 18, 1983. I apologize for the inconvenience.

Attachment,

Distribution:

Messrs. Bronfman, Wackman, Ali (EAP);  
Gulhati (EANVP); Messenger (EAL);  
Rao (EGYEC); Ahmed (EGYEA)

cc: Working Level Reviewers: Messrs. Wagner, Schramm (EAP);  
Hall, King (EAL);  
Newcombe, Terrado (EGY)

MAhmed:aaf.






## OFFICE MEMORANDUM

To: Mr. H. Messenger, Chief, EAI

Date: November 10, 1983

From: Julian Bharier, Chief, EGYEA Subject: Financing of Mr. Damry's consultancy for CAPCO review

1. I refer to Mr. Gebhart's memorandum of November 2 indicating that the East Africa Region has agreed to contribute \$12,000 towards the cost of the above exercise, and asking for the remainder to be financed under the UNDP/World Bank Energy Sector Management Program. I am pleased to confirm that we will be able to provide the funds that have been requested within the constraints of the agreed overall budget for this exercise as set out in Mr. Gebhart's letter of November 1, 1983 to Mr. Nebwe. However, I would like to add that our continued participation in this task is subject to the findings of Mr. Damry's most recent trip. As you know, Mr. Damry had telexed his concern on the progress of the Committee's work and indicated that he might have some "radical proposals" for the organization of the Committee's future work. Under these circumstances, I believe that we should carefully review Mr. Damry's report, which is apparently in the mail, before deciding on whether and how to proceed.

cc: Messrs. Kraske, Gebhart (EAI);  
Ducker (EANVP);  
Bronfman, Wackman (EAP);  
Rao, Ahmed (EGY);  
Ms. Owen (EGYEA)

MAhmed:aaf.





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TO:

GRAND HOTEL, STOCKHOLM, SWEDEN. FOR WORLD BANK GUEST, DR. JULIAN BHARIER. REPLYING TO YOUR CALL OF TODAY, THE FOLLOWING IS THE CONTENT OF THE TELEX SENT TO YOU IN OSLO YESTERDAY. QUOTE (AAA) REGARDING LESOTHO ZIA SUGGESTS THREE POSSIBLE AREAS. (1) ENERGY PLANNING/ECONOMICS FOR EIGHTEEN MAN-MONTHS. APPROXIMATE COST USDOLLARS 180 THOUSAND. NO FUNDING SOURCE IS YET IDENTIFIED. (2) ESTABLISHMENT OF FORESTRY SERVICES. COST NOT YET DETERMINED BUT AFRICAN DEVELOPMENT BANK APPEARS TO BE INTERESTED IN PROVIDING TECHNICAL ASSISTANCE AS PART OF US DOLLARS 8.5 MILLION FORESTRY CONSERVATION PROJECT. PROJECT IS UNDER CONSIDERATION. (3) PREPARATION OF HYDROCARBON EXPLORATION PROMOTION PACKAGE FOR THREE SEDIMENTARY BASINS. COST NOT YET DETERMINED AND EGYD2 IS EXPECTED TO REVIEW THE MISSION'S FINDINGS AND DATA. (BBB) RE ANGOLA NO RESPONSE AS YET. UNDP FOLLOWING UP SHOULD THERE BE A REQUEST, AKIN FEELS WE MIGHT INVOLVE BEIJER INSTITUTE IN THE ASSESSMENT. THEY ARE CURRENTLY WORKING WITH SADCC CENTRE UNDER NORWEGIAN AID. NORWAY MIGHT BE HAPPY TO FUND THE BEIJER INPUT IF WE CAN WORK OUT A MUTUALLY AGREEABLE MECHANISM. (CCC) RE NOEL'S MISSION TO BURUNDI HE CAN DELAY TO FIRST TWO WEEKS OF AUGUST SO AS TO OVERLAP WITH EC TECHNICAL ADVISOR. (DDD) RE PROJECTS FOR NORWEGIAN TA FUND. YOU MIGHT ALSO RAISE THE QUESTION

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TO:  
OF FINANCING THE REHABILITATION OF THE KELANATSSA STEAM PLANT WHICH HAS BEEN IDENTIFIED THROUGH SRI LANKA LOSS REDUCTION STUDY. THIS WORK WOULD ENTAIL AN EXPENDITURE OF USDOLLARS 1.4 MILLION, OF WHICH USDOLLARS 250 THOUSAND IS FOR CONSULTING SERVICES, US DOLLARS 150 THOUSAND FOR CONTRACTORS AND THE REMAINDER FOR EQUIPMENT. IT WOULD LEAD TO AN ESTIMATED BENEFIT OF USDOLLARS 2.8 MILLION PER YEAR IN TERMS OF FUEL SAVINGS. (EEE) MORE GENERALLY, IS THERE ANY INTEREST IN FINANCING POWER LOSS REDUCTION STUDIES OF THE TYPE WE INTEND TO CARRY OUT IN KENYA. WE COULD CARRY OUT SIMILAR STUDIES IN VIRTUALLY EVERY COUNTRY YOU LISTED ON THE PHONE. AVERAGE COST WOULD BE USDOLLARS 50-60 THOUSAND IF WE MANAGED DIRECTLY USING INDIVIDUAL CONSULTANTS. BUT IF SUBCONTRACTED AS PACKAGES TO A CONSULTING FIRM THE COST WOULD BE ABOUT US DOLLARS 150 THOUSAND. (FFF) THE MINIHYDRO PROJECT PROPOSAL IS AS FOLLOWS. QUOTE THE PROJECT IS AIMED AT REFINING AND DEVELOPING TO THE DEMONSTRATION STAGE TECHNIQUES FOR STANDARDIZING AND PACKAGING SMALL-SCALE (MINI-HYDRO) HYDROPOWER SYSTEMS. ALPHA. THE BANK/UNDP ENERGY ASSESSMENT PROGRAM HAS CONFIRMED THAT MANY DEVELOPING COUNTRIES HAVE A LARGE NUMBER OF POTENTIALLY ECONOMIC HYDROPOWER SITES (SAY 5KW-500KW) THROUGHOUT RURAL AREAS NEAR TO EXISTING LOAD CENTRES. THE GREATEST CONSTRAINT TO RAPID

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EXPLOITATION OF THESE SITES IS THE COST OF DETAILED DESIGN AND  
 CONVENTIONAL CONSTRUCTION TECHNIQUES ASSOCIATED WITH INDIVIDUAL  
 SCHEMES. THE SCALE OF INVESTMENT DOES NOT ATTRACT PRIVATE  
 ENGINEERING COMPANIES WHILE GOVERNMENTS RARELY RETAIN THE NECES-  
 SARY ENGINEERING AND OTHER SKILLS. STANDARDIZATION, STREAMLINING  
 AND WHOLE SALE APPRAISAL TECHNIQUES MUST BE DEvised FOR A RANGE  
 OF TYPICAL RURAL ENVIRONMENTS, PACKAGED ON A SCALE ATTRACTIVE TO  
 FINANCIERS AND DEVELOPERS, AND EFFECTIVELY DEMONSTRATED IN ORDER  
 TO STIMULATE MORE EXTENSIVE EXPLOITATION OF THIS VALUABLE RESOURCE  
 IN THE RURAL THIRD WORLD. BETA. WE HAVE IDENTIFIED THREE COMMON  
 ENVIRONMENTS IN WHICH SMALL SCALE HYDROPOWER POTENTIAL IS ABUNDANT,  
 AND FOR WHICH DETAILED CONCEPTUAL DESIGN AND ANALYSIS LEADING TO  
 FULL PRE-INVESTMENT WORK OR DEMONSTRATION PROJECTS WOULD SERVE TO  
 ACCELERATE THE GLOBAL UTILIZATION OF THIS RESOURCE. (1) NEW HIGH  
 HEAD DEVELOPMENTS IN REMOTE AREAS WITH NO CIVIL WORKS ALREADY AT  
 THE SITE. THE EMPHASIS WILL BE ON DEVELOPING STREAM-LINED DESIGN  
 AND ENGINEERING PROCEDURES. COUNTRY CHOICE PERU/INDONESIA. (2)  
 EXISTING BUT INEFFICIENT TRADITIONAL WATERWHEELS IN NEED OF  
 UPGRADING TO MORE FULLY EXPLOIT A KNOWN POWER POTENTIAL WHICH  
 COULD BE USED BY RURAL INDUSTRIES AND SURROUNDINGS COMMUNITIES.  
 COUNTRY CHOICE NEPAL. (3) EXISTING IRRIGATION SYSTEMS WITH

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SMALL SCALE HYDROPOWER POTENTIAL WHICH REQUIRE RAPID APPRAISAL AND STANDARDIZED DESIGN AND CONSTRUCTION TECHNIQUES TO EXPLOIT THIS POTENTIAL. COUNTRY CHOICE SRI LANKA/BANGLADESH. IN ALL CASES EMPHASIS IS TO BE PLACED ON ECONOMIC DISPLACEMENT OF EXISTING DIESEL GENERATION AND EXPANDING SUPPLY TO EXISTING MARKETS. GAMMA. THE FIRST OUTPUT WILL BE A PRE-FEASIBILITY REPORT OUT-LINING THE TECHNICAL AND COMMERCIAL PROSPECTS FOR RAPID IMPLEMENTATION OF SMALL HYDROPOWER-BASED RURAL ELECTRIFICATION ENCOMPASSING SIMPLIFIED CONSTRUCTION AND APPRAISAL TECHNIQUES AND PROGRAMME PACKAGING, FINANCING AND MANAGEMENT GUIDELINES FOR ONE COUNTRY IN EACH CATEGORY. COST: DOLLARS 250 THOUSAND. THE SECOND OUTPUT WILL BE A DETAILED FEASIBILITY STUDY IN UP TO THREE COUNTRIES FOR AN INVESTMENT PROJECT THAT WOULD BE LARGE ENOUGH TO ATTRACT TRADITIONAL FINANCING AGENCIES. COST: DOLLARS 900 THOUSAND. DELTA. THIS PROGRAMME, COSTING USDOLLARS 1.15 MILLION, ARISES FROM THE JOINT UNDP/WORLD BANK ENERGY SECTOR ASSESSMENT PROGRAM, AND WILL BE MANAGED BY THE ENERGY ASSESSMENT DIVISION OF THE ENERGY DEPARTMENT OF THE WORLD BANK UNDER THE JOINT UNDP/WORLD BANK ENERGY SECTOR MANAGEMENT PROGRAM. UNQUOTE. HOPE ABOVE INFORMATION MAY BE OF SOME ASSISTANCE IN YOUR MEETINGS IN STOCKHOLM. REGARDS, MASOOD AHMED, WORLD BANK.

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CLASS OF SERVICE: **Telex** TELEX NO.: **GRAND HOTEL 19500** DATE: **7/1/83**

SUBJECT: **ESMP - Donors**

DRAFTED BY: **MAhmed:cra**

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**Masood Ahmed**

DEPARTMENT: **ENERGY**

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# OFFICE MEMORANDUM

TO: Ms. H. Ribe, EGYEC

DATE: July 1, 1983

FROM: Yves Rovani, Director, EGY



SUBJECT: Contribution to the Energy Policy Paper

As you know the published credits on the Energy Transition Report have been much restricted due to space and presentational reasons. I would like to put on record, however, my personal appreciation and that of the whole department for the valuable contribution that you have made to the preparation of this report over the past year. I know that this has called for a level of effort far in excess of the "call of duty" and I would like to complement you on the way you have handled a heavy workload while maintaining your infectious good humor.

cc: Ms. Kathleen A. Good (PMD)  
Mr. D. C. Rao (EGY)

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**WBG ARCHIVES**

## OFFICE MEMORANDUM

TO: Mr. R. Taylor

DATE: July 1, 1983

FROM: Yves Rovani, Director, EGY SUBJECT: Contribution to the Energy Policy Paper

I know that D. C. Rao and Masood Ahmed have already conveyed to you the Department's appreciation of the contribution that you have made to the preparation of the Energy Transition Report over the past year. I would like to add my personal appreciation and thanks for your efforts. Your painstaking work on the quantitative aspects of the Report has helped to create a document which we can be proud of.

cc: Mr. Bharier (EGY)  
Ms. D. Ringle (PMD)

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**WBG ARCHIVES**



## OFFICE MEMORANDUM

TO: Distribution

DATE: July 1, 1983

FROM: Masood Ahmed, EGYEA SUBJECT: Papua New Guinea: Energy Sector Status Report

1. Attached please find a copy of the above report which outlines developments in the energy sector in Papua New Guinea since the publication of the Energy Assessment Report in June 1982. The report also describes the progress that has been made in implementing the recommendations of the Energy Assessment and it identifies the priority areas where further technical assistance is required in the sector.
2. This report was prepared by a mission comprising Messrs. M. Ahmed and N. B. Prasad which visited Port Moresby from June 6 - 12, 1983. This work has been financed under the Joint UNDP/World Bank Energy Sector Management Program.
3. The report was discussed in the field with the Government of Papua New Guinea (Secretary and Staff of the Department of Minerals and Energy, Finance and National Planning Office). The Government supports the analysis and recommendations in the report and has cleared it for final distribution to UNDP and other donor agencies.
4. I would be grateful if you could send your comments on this report by July 11 so that it can be finalized. A meeting to discuss the report will be arranged if requested.

Attachment

Distribution:

Messrs. Jaycox, Tsantis, Berlin (AEA); Turnham, Beach, Rovani, Rao, Sheehan, Sadove, Bourcier, Fish, Dosik, McCarthy, Kalim, Bharier, Wackman (EGY), EGYEA Staff.  
Mmes. Vedavalli (EGY); Farmer (AEA)

## PAPUA NEW GUINEA

### COUNTRY STATUS REPORT

#### I. BACKGROUND AND SUMMARY

1.01 Papua New Guinea imports virtually all of its commercial energy in the form of petroleum products even though it has a diverse and potentially very large indigenous energy resource base. This paradox is due to two factors. First, the indigenous energy resources have not been adequately defined; and second, the small and fragmented nature of domestic energy markets makes the economic development of these resources additionally complicated. The principal focus of the energy assessment mission which visited PNG in November 1981 was to help define a strategy to overcome these difficulties. The two main strands of this strategy as recommended in the mission's report 1/ were:

- (i) to accelerate the identification and development of PNG's petroleum potential for domestic markets and/or for export; and
- (ii) to analyze the various options for electric power generation and thus to put into place a revised power supply system which would result in a cheaper and more reliable supply of electricity.

1.02 The report also made a number of other recommendations including the rationalization of the previously excessively large and diverse program to develop nonconventional, renewable energy sources, and the strengthening of the institutional framework for the energy sector to enable the Government to effectively address the above issues.

1.03 The Government's response to the issues identified by the energy assessment report has been remarkably quick and wide ranging. Work has begun on most of the studies and further analysis required to define a strategy for petroleum development and utilization and for the preparation of a least cost power development plan. The renewable energy development program has been further scaled down and reoriented to technologies which are likely to have earlier and more certain payoffs for the country. However, on the institutional question while progress has been made on strengthening the policy and technical capability at the sectoral level, its pace has been slow and further action is urgently required. This is particularly so in the petroleum sector, where the existing institutional structure and staffing will soon become inadequate

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1/ Papua New Guinea: Issues and Options in the Energy Sector, June 1982. Report of the Joint UNDP/World Bank Energy Assessment Programme.



to cope with an increasing level of private exploration and development activity. Support for institutional strengthening should therefore be a high priority in the future technical assistance programs of donor agencies. In parallel, the Government will also need to make a substantial reallocation of its own staff resources to the energy sector and to revise and streamline the existing institutional arrangement for the management of this sector.

## II. ENERGY SECTOR DEVELOPMENTS, NOVEMBER 1981 - JUNE 1983

2.01 The major developments in the energy sector since the November 1981 assessment mission are summarized below. On the demand side, the consumption of both petroleum products and electricity stagnated in 1982, partly because GDP fell by an estimated 1% and partly because of the sharp rise in electricity tariffs in January 1982. Total petroleum product consumption in 1982 is estimated at 644 ktoe (1981: 675 ktoe) and total electricity generation in the public system was 442 GWH (1981: 460 GWH). Because of continued poor rainfall thermal generation accounted for 36% of total generation (the same as in 1981). The oil import bill in 1982 (K147 million) was also the same as in 1981. Despite the fall in crude oil prices, 1983 oil imports will not cost significantly less because of the devaluation of the Kina in March 1983 (about 10% against the US dollar). After increases of 70% in the period November 1980 - December 1981, electricity tariffs remained constant upto May 1983. In June 1983 the tariff structure was revised to provide a uniform national tariff of 16.0 toea/KWH (average sales price in 1982 was about 13 toea/KWH). The new tariff structure results in a serious disparity between costs and tariffs for the various independent supply grids because the costs of power supply in these grids are very different.

2.02 On the supply sides, the main developments have been in the petroleum sector. There has been an increase in exploration interest with Shell/Amoco applying for a license in the North New Guinea basin and some smaller companies applying for licenses in the Gulf area (south of Pasca) and in areas adjoining the Barikewa concession. Some preliminary seismic and geochemical work has also been undertaken in the Cape Vogel basin. There has been a gas and condensate discovery by Gulf oil at Juha in the Southern Highlands. The potential of this deposit (initial flows 8.3 MMCFD of gas and 580 barrels/day of condensate) is being investigated. An important negative development has been the blowout of the second Pasca well in February 1983, which has still not been stemmed. The inadequate and slow response in dealing with the blowout problem has highlighted the urgent need to streamline and strengthen the Government's capability for managing petroleum exploration and development. This is reinforced by the need to formulate quickly a comprehensive strategy for the utilization of proven gas resources.

2.03 In the other energy subsectors, important developments include the commissioning of a second 20MW gas turbine in the Port Moresby system. The Ramu ethanol project is progressing according to schedule and agreements have been reached with the oil companies to market a 20% ethanol blend gasoline in the Lae area when production starts later this year. Finally, as discussed in Section IV below, considerable progress has been made in identifying and realizing the potential for improved energy efficiency in the industrial and commercial sectors.

### III. ON-GOING TECHNICAL ASSISTANCE ACTIVITIES

- (i) The World Bank: Assistance is being provided under a Petroleum Exploration Technical Assistance Project (cofinanced with the OPEC Fund) to strengthen the monitoring and promotion capability in the petroleum sector. In addition, the Bank has been closely involved with the broader follow-up to the energy assessment. A July 1982 mission assisted in the preparation of terms of reference for a variety of coal and power subsector studies which have since been started. Subsequently, a March 1983 mission reviewed and commented upon the drafts of many of these studies and proposed additional work required to complete them. The Bank's regional projects staff continue to be involved in the final stages of this work.
- (ii) The New Zealand Government is funding the foreign exchange costs (about K150,000 over 1 year) for a mini-hydro resource inventory; this may be renewed for another year.
- (iii) A number of regional assistance programs may provide financing for small renewable energy and conservation projects. These include the EEC (administered by the South Pacific Bureau for Economic Cooperation), UNDP's Pacific energy program, and Commonwealth Heads of Government Regional Meeting Special Energy Funds; and bilateral assistance from the Australian and New Zealand Governments.

### IV. STATUS OF ENERGY ASSESSMENT RECOMMENDATIONS

#### Petroleum

- (i) Induce oil companies to accelerate their exploration activities to firm up reserves and reach agreement on the development of discovered gas fields. Work programs proposed for new licenses and for renewal of existing licenses are being reviewed to this end by Petroleum Resources Assessment Group (PRAG) and its consultants. Recent onshore find at Juha (gas/condensate) being evaluated. See below for development activities.



- (ii) Carry out utilization studies on onshore/offshore gas fields

Pasca: Consultant prefeasibility study of field development completed April 1983; utilization study for petro-chemicals completed April 1983; suggests production of ammonia-urea onshore as most promising but still marginal prospect; private study on barged transport of pressurized LNG to Bougainville Copper Mines received May 1983 and being reviewed; however all further work on hold because of well blowout.

Barikewa: Desk study by Elcom on using this deposit for power supply to Ramu grid is being reviewed by Government and may need to be reworked using more recent information on costs and reserve potential provided by consultant studies financed through the Petroleum Exploration Technical Assistance Project. In particular feasibility of using slim hole drilling to reduce cost needs to be considered.

#### Electric Power

- (iii) Analyze options for Ramu and Port Moresby grids and prepare least cost power development program

The following studies have been completed by consultants employed by Elcom:

- a) Port Moresby 25MW coal fired station costing study (March 1983).
- b) Port Moresby System - Investigation of hydro power alternatives (interim report, December 1982).
- c) Ramu System - Investigation of Hydro power alternatives (interim report, January 1983)
- d) Barikewa Gas - preliminary assessment (in house Elcom Study, February 1983).

These studies are now being reviewed by the Bank and by Elcom's resident consultants who will also prepare a least cost development program for the power system. This analysis will also take into account the utilization of large size slow/medium speed diesel and of interconnecting the Ramu/Port Moresby systems.

(iv) Compile an inventory of major hydro sites and introduce gauging stations on small hydro sites for which there are no flow records.

Work has begun with financial assistance of the Bank. About 60 sites of 30 MW or more will be covered in a two year inventory; gauging network is expanding but shortage of counter part funds is slowing down both efforts.

(v) Investigate use of wood and wood wastes for power generation.

Economic potential for using wood waste for supply to Elcom grid appears smaller than initially envisaged; evaluation of smaller sized plants (direct burning and gasifiers) being done to supply rural industry.

(vi) Analyze economics of shifting Bougainville copper mines power generation from oil to coal.

No decision has been reached on Bougainville's future energy supply mix because the costs and feasibility of generating electricity from Lualaba hydro scheme and Pasca gas (LNG/LPG) are still being evaluated.

(vii) Carefully analyze economics of Rouna 4 project before embarking on it.

Further Government analysis of this project continues in view of potential bilateral concessionary financing that is tied to it.

#### Coal

(viii) Analyze commercial viability of developing Purari coal deposit.

In-house study carried out by Geological Survey in early 1983 indicates that such development would not be commercially viable at this time.



Conservation

No specific recommendation.

Energy audits completed on 4 hotels, a hospital, a brewery and several other sites. Savings of 20-50% on energy bills identified in most cases; partial or complete implementation of recommendations proceeding (payback periods 0-3 years). Demonstration projects on lighting, air conditioning and waste heat recovery commencing in public sector.

Cogeneration

No specific recommendations.

Highly economic private sector cogeneration applications identified in breweries, other industries and hotels. Investment may not proceed because of uncertainty over Elcom standby tariffs. This question needs to be analyzed urgently to permit economic cogeneration to proceed.

Renewables

(ix) Restrict investment in ethanol to the Ramu project and evaluate critically all other proposals.

Ramu project is nearing completion. Baiyer River project has been cancelled. No other ethanol projects are planned.

(x) Halt or reduce investments in biogas, pyrolysis and photovoltaic experimental projects.

No further investments made in biogas and pyrolysis; photovoltaic investments are being limited to proven applications and to demonstration projects where tied aid is involved.

(xi) Continue to support solar water heaters in the residential/commercial sectors.

Solar water heaters continue to flourish. The current installed number is about 7,500 of which 90% are in residences.

Institutions

- (xii) Strengthen the institutional capability for dealing with the oil and gas sector and consider the eventual establishment of a separate oil and gas agency.
- Some progress has been made through the establishment of PRAG and the assistance provided by the Bank assisted Petroleum Exploraton Technical Assistance Project. The institutional structure and staffing in this area need to be reviewed (see Section V below).
- (xiii) Reorient work of Energy Planning Unit to focus on all energy sources and create a separate unit for the implementation of renewable energy and conservation measures.
- Given the cutback in the renewable energy program the Government has decided not to create a separate unit for this area. The mission agrees that this is not a high priority now. EPU's focus is also being broadened to cover conventional energy sources, including petroleum. Energy demand forecasts and alternative supply scenarios have been prepared. However, as noted below, EPU's staffing needs to be considerably strengthened to enable it to discharge those broader responsibilities effectively.

V. PRIORITIES FOR TECHNICAL ASSISTANCE

(i) Institutional Review of Energy Planning

5.01 The two most important components of the energy sector in PNG are petroleum and power. The most significant development noted by the mission since the publication of the Assessment Report has been the acceleration of activity in the petroleum subsector. This acceleration has put increased strain on the three Divisions of DME involved in the petroleum sector (viz. Mines, Policy and Planning, and Geological Survey) and has highlighted the difficulties of coordination between those Divisions. These difficulties also extend to the interface between DME and the Electricity Commission on the evaluation of various options for the use of indigenous gas reserves (Barikewa, Pasca and most recently Juha) for power generation.

5.02 It has been agreed by the Secretary of DME that a comprehensive review of institutional responsibilities and capabilities in the energy sector is now urgently required to avoid the prospect of DME itself



becoming a bottleneck on the near-term development of PNG's petroleum resources both for export and for power generation. This review would encompass all relevant Divisions of DME, their interrelationship, as well as their relationship with other energy agencies such as the Electricity Commission. In the petroleum subsector the focal point of the review would be the Petroleum Advisory Board, chaired by the Secretary of DME. This review would define the respective responsibilities of the various parts of the DME in the area of energy sector management and planning. It would also identify the staffing and technical assistance that would be needed to help DME carry out these tasks effectively. The review would also define the training required to ensure progressive build-up of an indigenous energy planning capability within PNG.

5.03 The Government has requested, and the mission strongly supports, that such a review be carried out urgently under the Energy Sector Management Program. The required input is estimated at two to three man-months.

(ii) Co-generation and Auto-generation

5.04 At the time of the Assessment Report it was felt that the Government's policy on energy pricing had resulted in a broadly appropriate structure of incentives for energy production and consumption. The mission notes that a system of uniform national tariffs for electricity has since replaced the previous cost-based structure and, as a result, a number of fuel substitution anomalies have recently arisen. In particular, the present combination of electricity tariffs and standby charges appears to be preventing the development of a number of economic options for cogeneration and auto-generation in the private sector.

5.05 To resolve these issues, and to promote a balanced development of private and public sector least-cost energy supply options for both heat and power, a study is required of the structure of tariffs and regulations governing cogeneration. This study would be based on a review of time-pattern of production costs in each of the Electricity Commission's supply grids.

5.06 Again, the Government has requested and the mission proposes that this study be funded under the Energy Sector Management Program, with the required input estimated at 6 - 8 staff weeks.

(iii) Information Base for Energy Planning

5.07 The mission notes that considerable effort has been made recently to fill in gaps in the energy data base and to exploit this information for systematic planning of medium-term energy options. This activity now appears to be constrained by a shortage of suitably-trained staff and by the limitations of manual data processing.

5.08 It was agreed tht the institutional review (in (i) above) could usefully define how these needs could be met through a range of data processing options (both hardware and software components). ESMP funding for implementing these options is not envisaged but some funds may be required to assist the PNG Government to find a suitable source of funding.