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FORM NO. 635
(6–77)

CLOSE – OUT SHEET

This file is closed as of June 30, 1986

For further correspondence, please see Vol. 7.

RECORDS MANAGEMENT SECTION

THE WORLD BANK INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

F338

DATE June 30, 1986

TO Mr. Bernard Montfort, Chief, EGYS1

IN1R3/005

FROM Vineet Nayyar, Chief, AEPEN

EXTENSION 6-0001

SUBJECT MALAYSIA - Technical Assistance to the Sabah Electricity Board (SEB).

As explained in the Back-to-Office Report, dated June 3, 1986, of the Review of Power Sector Issues and Options, SEB had indicated to the sector mission that it would send a request for a detailed Bank review of its operating practices. We have now received the enclosed letter requesting Bank's assistance for this review. Such a review could take the form of a standard ESMAP operation, which can be conducted by EGY using UNDP resources. This review is expected to result in the development of a financeable efficiency improvement package for the power sector, which could become a component of the proposed Bank energy sector loan to SEB and the Sabah Energy Corporation (SEC) (paras 11-18 of the Back-to-Office Report).

HRazavi:gd

cc:Messrs. Yenal (AENVP), Davar, Karcher,(AEPDR), Dutt, Struben Yusuf (AEASP), K. Ahmed, Albouy, Sopher, Mehta (AEPEN), Churchill, (3) McCarthy, Saunders, Fish, Green, Gulstone, Koening (EGY). AEP and Div. Files

INT|83|005-

Note

DATE: June 27, 1986

TO: Mr. Steve Klein, USAID, Rabat Office

FROM: Naiem Sherbiny, Energy, World Bank NAS

SUBJECT: MOROCCO: Household Energy Strategy

1. Enclosed please find our draft of Project Document No. 1 of the study mentioned above. It is identical to the Activity Initiation Brief of February 1986 in many parts, but it is also new in others. The new parts incorporate comments received from the Government, USAID, and the Bank following circulation of the February version. The present version is entitled "Scope of Work and Conceptual Design", and the new parts appear as paras. 3.1 - 3.5; 3.28 - 3.32; and 4.1 - 4.5. Please circulate to Rob and Mohamad. I would appreciate it if you take a good look at those paragraphs and let me know what you think by July 15. Subsequently, we shall issue the document in final form, both in English and French, at which time it may be distributed to the Government and consultants.

2. Next on our agenda is the set of outlines for the six Policy Working Papers identified in the enclosed document. Together they will constitute Project Document No. 2, to be circulated in the Bank and to all members of the interministerial Task Force. This approach enables us to identify the pertinent questions, on the basis of which the questionnaires will be formulated. You should expect draft Document No. 2 to reach you in about two weeks.

3. Documents 3 and 4 will be the draft questionnaires for households and energy suppliers, respectively. They are targetted to be issued at the end of July.

4. Documents 5 and 6 will be the draft samples for households and energy suppliers, respectively. As per my telephone conversation with Rob on June 24th, I wold like to have those completed by INSEA around the end of July.

5. We will then have Aug. 1 - Sept. 10 to review sample design and questionnaires before proceeding to the pilot test during Sept. 24 - 30, 1986.

6. Regarding the Field Manager, it is only fair to let MEM have until the end of July to identify a candidate. If by that time they have not been able to identify suitable candidates, we will have to produce the short list after ascertaining individual availability. The final choice still has to be that of MEM. What do you think?

cc: Vicki Pierce (EM2), Joe Leitmann (EGY)

NSherbiny:bre

GOVERNMENT OF MOROCCO

HOUSEHOLD ENERGY STRATEGY

Project Document No. 1

Scope of Work and Conceptual Design

June 1986

An Energy Sector Management Assistance Study

Jointly Financed by

The United States Agency
for International Development

The World Bank

GOVERNMENT OF MOROCCO

Household Energy Strategy

Scope of Work and Conceptual Design

I. BACKGROUND

1.1 The 1984 Energy Assessment Report for Morocco noted the increasing degradation of the country's forest resources and highlighted the need for a biomass resource/rural energy survey for planning purposes. The January 1986 Energy Status Report for Morocco stressed the need for the country to develop a broader household energy strategy which would identify the characteristics of rural and urban consumer demand for energy and ways to improve the supply and distribution of energy products. Lack of concerted action in these areas has made it difficult for the country's efforts to meet household energy needs. Major problems which have resulted are: the continuing depletion of forest resources; the possible mismatch between the supply of petroleum products and household demand; and the subsidization of some household fuels without an economic assessment of the alternatives, possibly leading to bottlenecks in the present structure of distribution and retail channels.

1.2 The household sector in Morocco accounts for 52% of total energy consumption, and woodfuel accounts for more than 80% of household energy consumption. All other sectors consume only commercial energy, primarily petroleum products and electricity. With close to 40% of overall energy consumption derived from fuelwood (52% x 80%), deforestation is proceeding at the rate of about 35,000 hectares per year. Although this is a relatively small portion of Morocco's total forest cover of 5.3 million hectares, the potential economic and ecological damage of deforestation in some specific locations in the long-run is enormous.

Issues

1.3 The need for a household energy survey in the country is heightened by the absence of reliable data on the level, composition, and costs of household fuels, both traditional and commercial. Information on marketing and distribution channels for the alternative fuels also is lacking. As a result, the Government of Morocco (GOM) has not developed a comprehensive strategy for addressing household energy needs. The task before it now requires:

(a) developing a national action program for managing energy demand in households;

(b) developing a national action program for conserving and developing woodfuel resources;

(c) formulating pricing policies for commercial energy which support demand management and encourage conservation and inter-fuel substitution in households;

(d) adopting a systematic strategy for marketing and distributing renewable and commercial energy products to households; and

(e) establishing a reliable data base sufficiently disaggregated by region to allow empirically-based policy formulation in the areas mentioned above.

Institutions

1.4 As the energy needs of households cut across the operational domain of several agencies, institutional responsibility for household energy policy in Morocco is diffused. The Ministry of Energy and Mines (MEM) is responsible for centralized energy investment planning. Although MEM has recently established a planning unit with USAID assistance, it is not involved in matters related to household energy. The Forestry Administration handles reforestation planning and implementation but has not yet become involved in fuelwood per se. The Renewable Energy Development Center (CDER) and the Ministries of Agriculture and Interior are active in renewable energy development and pilot project testing in several communities for various purposes, including household use. However, most activities are directed at community use, such as by schools, hospitals, farms, etc. The National Electricity Office (ONE) is responsible for electric power generation and development and the regies distribute electricity to final users. The plans and actions of both entities thus affect the pattern of household energy use and are indeed affected by such pattern at the same time. The National Petroleum Office (ONAREP) and the National Oil Products Company (SNPP) directly manage petroleum product supply and distribution. As in electricity, there is some degree of interdependence between the action programs of these institutions and the energy behavior of households. Finally, the Ministry of Planning is responsible for integrating energy sector plans and policies into macroeconomic analysis.

Rationale for Strategy Development

1.5 The GOM needs a strategy for systematically identifying appropriate energy pricing, supply and distribution policies for households to guide the many agencies involved in the sector. This strategy should be built on a reliable, disaggregated data base which will provide empirical findings on existing patterns of household energy

demand and supply and their costs in the country's numerous provinces. At the suggestion of the Bank, the government has established a counterpart Task Force under the leadership of MEM to manage the project locally and provide an institutional base to assure continuity of the project. In addition, the large data base that would be generated is proposed to be maintained in a data bank in the Energy Planning Unit of the MEM. The objective is to help establish a defined planning capability within the GOM to better meet the energy needs of Moroccan households, from both socio-economic and ecological perspectives. The resources and steps involved in establishing this capability are described in the policy working papers (paragraphs 3.18 - 3.33).

II. STUDY OBJECTIVES

2.1 The overall objective of the study is to formulate an empirically-based strategy for the GOM to use in evaluating policy options for household energy. This work involves:

(a) developing a data base on the quantities and relative costs of fuels used in Moroccan households, the marketing and distribution channels of those fuels, and the patterns of household energy supply and demand, reflecting regional and seasonal variations;

(b) defining, developing and evaluating a set of priority energy policy options;

(c) preparing a detailed, coordinated action plan to minimize the cost of household energy consumption, protect the country's domestic energy resources, especially fuelwood, and better meet household energy consumer needs projects which can be integrated into regional development plans; and

(d) identifying some potential projects for rural and urban households which can be integrated into regional development plans.

In the process of executing these activities, the aim is to transfer skills and techniques to Moroccan staff so that they can perform similar exercises without foreign expertise in the future.

Data Base

2.2 The required data base should cover:

(a) prices, quantities and types of household fuels consumed;

(b) household expenditure patterns for fuel and the relative burden of fuel in the household budget;

(c) household cooking appliances and measurements of their efficiency;

(d) cooking habits, including regional, seasonal, income and rural-urban variations;

(e) non-cooking energy end-uses, and their variations according to region, season, family income, and rural-urban location;

(f) marketing and distribution channels for household energy;

(g) availability and cost of existing and potential fuel substitutes;

(h) household attitudes toward possible changes in energy use and energy sources; and

(i) institutional capabilities for implementing the household energy projects and policies identified.

Policy Options

2.3 To minimize household energy expenditures and preserve the national energy resources without significantly reducing consumer satisfaction, the study will consider inter-fuel substitution, demand management, and improved of energy supplies.

2.4 Inter-fuel Substitution. Inter-fuel substitution was identified as a priority in the Energy Sector Status Report because the harvesting of fuelwood for household energy use is the major cause of forest degradation in some locations. The principal substitutes for wood-fuel are liquefied petroleum gas (LPG), other petroleum products, coal, agricultural and agro-industrial residues, manure, and in some cases, hydro-electricity. The study aims to examine these substitutes for: (a) improvements in their marketing and distribution; and (b) the potential for developing new fuel substitutes (e.g. agro-wastes and other renewables).

2.5 Demand Management. Results of the household survey (paragraphs 3.2-3.11) would reveal the potential impact of conservation and economic pricing on the amount of energy consumed and the efficiency of fuel use in the average household. To meet these objectives the study will consider:

(a) reducing fuelwood consumption through the use of improved stoves, as already has been done in some World Bank projects in Niger, Ethiopia, and Burundi;

(b) reducing the consumption of commercial fuels through the use of more efficient energy equipment (lamps, stoves, space and water heaters, etc.);

(c) using promotion and extension campaigns to modify inefficient cooking habits; and

(d) pricing traditional and commercial energy products to reflect their economic costs.

2.6 Improved Supply. Results of the supply system survey (paragraphs 3.12 - 3.17) would provide guidance in:

(a) maintaining the resource base of woodfuel: reforestation efforts have relied almost exclusively on state-managed plantations financed by limited government allocations. This survey would explore the potential for commercial forestry development to supplement government efforts;

(b) increasing the efficiency of converting wood to charcoal through the use of improved kilns;

(c) improving wood harvesting practices: The free access to forests and random harvesting of wood have contributed both to deforestation and inefficient reafforestation. The imposition of stumpage fees (suggested by the Bank in Burkina, and already adopted in Ghana) or other fees in Morocco will be assessed;

(d) reviewing the efficiency with which woodfuel and charcoal are distributed in urban areas;

(e) identifying and quantifying the bottlenecks in marketing LPG and other commercial fuel substitutes; and

(f) reorganizing the distribution system for petroleum products in rural and urban areas.

Action Plan

2.7 Based on the development of the data base and the articulation of the available policy options, the study moves to the final stage: to synthesize results and prepare an action plan addressed to the empirically identified needs of Moroccan households. The objective of this plan is to minimize the cost of household energy consumption, subject to the constraint of protecting the country's energy resources. Setting priorities to guide the implementation of specific recommendations and proposed policies/programs is crucial to the formulation of the action plan.

III. OUTPUTS AND SCOPE OF WORK

3.1 The proposed work to be done in formulating a household energy strategy for Morocco consists of generating a household energy survey, an energy supply system survey, and a policy option analysis. To produce these results, several key tasks are proposed.

The Household Energy Survey

3.2 The purpose of the household energy survey is to capture the pattern and cost of household energy, identify seasonal and regional variations in these patterns, and examine policy-sensitive variables. The necessary information may be gathered first by reviewing previous surveys on related topics, and then directly by surveying households throughout rural and urban Morocco. For this information to be representative of the country as a whole, the following six stages should be observed in generating the data base: sample design and selection, questionnaire design, pilot testing, full survey, plans for machine tabulation requests, and basic tabulations. It has been proposed that a team of Moroccan consultants be contracted to assist in carrying out these activities. The Bank mission of April 1986 reviewed the capabilities of Moroccan consulting firms which specialize in survey work and identified the most suitable candidates for the job. The mission communicated its recommendations to USAID, and its Rabat office has begun to prepare, with Bank assistance, contracts for the activities which AID intends to finance as part of its contribution to the project.

3.3 Sample design and selection: The first step in the survey is to decide the nature and number of households that will make up the stratified random sample. Both the structure and size of the sample should allow for making generalized statements about the energy consumption patterns and behavior of Moroccan households. In setting the sample design two major surveys should be considered: the latest population census, and the recently conducted family budget survey. Both were conducted by the Statistics Department of the Ministry of Planning. The family budget survey is stratified according to the

population census and was drawn from a master sample which will be used as the sample frame (statistical tabulations from which the sample is drawn) for the proposed exercise. Standard statistical procedures should guide the selection process of households. The consultants, in coordination with Bank staff, should provide the design for the appropriate size and geographical distribution of the sample. It is worth noting here that the criteria presently used to draw lines of regional demarcation are inappropriate for the objectives at hand. Administratively, Morocco is divided into forty-nine provinces; economically, it is divided into seven regions. To capture the regional variations in energy use, neither of these divisions is satisfactory. The task before the consultants is to come up with a regional division of the country that maps existing divisions (administrative and/or economic) into climatically differentiated zones.

3.4 Care in designing the sample and developing systematic guidelines for selecting households should facilitate: (a) computing the probability that the drawn sample is indeed representative of the universe of Moroccan households; and (b) assigning relative weights to the information derived from any given household in constructing the overall profiles of energy use in households. The objective is to make generalized statements about the energy behavior of households with known probability.

3.5 Given the expected large seasonal variations in household energy use, conducting the survey at any given time of the year will most likely bias overall results for the rest of the year because energy use is typically high during the winter and low during the summer. Therefore the survey will be repeated to capture the full effects of seasonality. In discussions with Moroccan experts, it was concluded that the survey ideally should be conducted in three rounds timed as follows: January for winter, April for spring (or October for fall) and July for summer. The size of the sample need not be the same for each round the survey is conducted. Indeed the second and third rounds may be conducted with substantially smaller samples than the first. To minimize bias in sample selection, a portion of the households visited during the first round should be visited during the second; the rest may be new. Similarly, a portion of the households visited during the second round should be visited during the third. The appropriate size of the samples involved should be established by the consultants contracted for this activity. Finally, the duration of the survey should be made to capture the peak of the season for each trial. Generally, the duration of each round should not exceed 3-4 weeks to assure that the collected observations are sufficiently compatible and provide a systematic basis for comparison.

3.6 Special attention will be focused on the possible variations between rural and urban patterns of household energy use in each province. The rural-urban differences will be used to test some hypotheses, for example, the less efficient fuel consumption in average rural households, and the greater reliance of rural households on woodfuels and urban households on commercial fuels.

3.7 The Questionnaire Design: The questionnaire is the tool proposed for obtaining the information identified (in para 2.2 above) through direct contact with households. For this reason, the design phase requires breaking down broad policy issues into more narrowly focussed categories, and each of these in turn into a number of questions to derive quantitative indicators for some of the qualitative concerns of policymakers. The questionnaire should take about one hour for respondents to answer, and it should be written in a facile language which is easy for respondents to understand. The design of the questionnaire should go through several iterations. The first would be based on two aspects: (a) household energy surveys done elsewhere, where some hypotheses concerning household energy behavior have been formulated and tested; and (b) the data requirments for the policy working papers. The second iteration would result from discussions with experts on Moroccan conditions in Washington. A third iteration would result from intensive discussions with Moroccan experts in Rabat, especially those active in family budget surveys, and policy-makers.

3.8 The Pilot Test: Field pretesting of the questionnaire is proposed for a number of localities which represent the diversity of Morocco's geographical, climatological and rural-urban conditions. In consultations with the experts designing the sample, the project officer(s) should decide on an appropriate number of households to be pretested in the pilot survey. The key objective of the pilot survey is to test the questionnaire design and the logistics of conducting the general survey itself. In testing the questionnaire, the interviewing team should identify the following in the questions posed: ambiguities and/or inconsistencies; imprecise and/or confusing language in phrasing; redundancy and/or irrelevance of questions. The pilot test will be conducted by the interviewers going through the questionnaires with respondents in their homes and the test should take no longer than one week to keep costs down. Results of the pilot test should provide the basis for the final iteration in questionnaire design. In testing the logistics of conducting the survey, the results should help to determine the most appropriate timing of interviews and the final size, composition, and required skills of the interviewing teams.

3.9 The Full Survey: The survey should be designed to cover households in Morocco's different climatic zones, all within the 3-4 weeks duration. The division of the survey team among zones will be decided according to the sample design which follows the country's population clusters, with the objective of producing about 1000 completed questionnaires per week. After verification by heads of interviewing teams in their respective locations, questionnaires will be shipped to a central point for processing. The data contained in the verified questionnaires will be transcribed to a computer tape as the results arrive at the central point. At the end of the survey, the processing team will have produced an edited computer tape containing the data from the completed questionnaires. This tape represents the raw material for the analysis that follows.

3.10 Machine Tabulation Requests: To transform the raw data into a useful format, the project team will produce basic tabulations using machine tabulation requests (MTRs). The MTRs are series of commands written in one of several computer languages to perform the task of showing how data on two variables (or three, at the most) are related, in a tabular form. An example would be how much fuelwood is used in households according to level of family income, regional location or rural-urban position. The challenge in developing the MTRs is the requirement of spelling out all the required data in advance. Studies done elsewhere would be quite useful in developing the MTRs, such as studies used to formulate the questionnaire in the first place. It may be best to develop the MTRs in chapters according to the major categories identified in the questionnaire; for example, types of household fuels, cooking habits and equipment, non-cooking energy end uses, costs of fuel use, etc. These categories will be better defined in successive iterations of the questionnaire design.

3.11 The Basic Tabulations: The output that would result from applying the MTRs to the raw data tape is the set of basic tabulations. The latter would best be obtained in two forms: a hard copy to assist the project team both in identifying the basic variables necessary for further analysis and in shaping the direction of policy discussions; and a tape to be used for further analytical work which would underlie the more complex multivariate analysis that may be required for the working papers or for formulating the strategy. The basic tabulations will be produced in the same categories as the questionnaires and MTRs.

The Energy Supply Survey

3.12 The purpose of the energy supply survey is to identify ways to improve the overall energy supply to households. This survey will be conducted in parallel with the household energy survey and will have a similar series of outputs. The objectives in modifying the system of energy supply for households are stated in para 2.6. As planned for the household survey, the necessary information about the energy supply system may be gathered first by reviewing previous studies on related topics and directly by surveying individual entrepreneurs involved in marketing and distributing energy products for household use. This group covers heads of small enterprises and individual operators, both in rural and urban areas, handling either traditional or commercial fuels.

3.13 Sample Design and Selection: Unlike the sample design of the household survey, the present task is without precedent in Morocco. Therefore, the consultants should first establish an appropriate frame from which to draw the desired sample. As a guideline for supply sample design, the location of entrepreneurs to be surveyed should correspond to the location of clusters of households to be surveyed. The consultants assigned this task should establish the overall size of the national sample and the criteria for selecting the respondents to be interviewed. The same methodical rules applied in the households sample should apply equally to the supply system sample to facilitate: (a) computing the probability that the drawn sample is indeed representative

of the universe of Morocco's energy suppliers; and (b) assigning relative weights to the information derived from individual suppliers in constructing the overall profiles of fuel supply to the country's households. The objective is to make generalized statements about the energy supply system with known probability. The sample design team should decide whether a repeat survey is needed to capture seasonality.

3.14 The Questionnaire Design: The energy supply questionnaire is the tool proposed to gather the data needed ultimately to improve energy supplies in Morocco. The same care and deliberation exercised in formulating the household questionnaire are equally applicable in this task to divide the broad issues into more narrowly focused questions to derive quantitative indicators. Considerations of the questionnaire's length and clarity of questions should be equally observed in this task. This questionnaire also will be formulated in iterations, guided first by work presently undertaken by the Bank for Ethiopia, Ghana and Rwanda, then modified by discussions in Washington and Rabat.

3.15 The Pilot Test: The energy supply questionnaire will be pretested at the same time and in the same localities as the household questionnaire. Guided by the assessment of consultants, the project officers should decide on the appropriate number of supply questionnaires to be pretested. The results of the pilot test should help fine-tune the survey tool and prepare it for the full survey.

3.16 The Full Survey: The energy supply survey will be conducted in the same locations and for the same duration as the household survey. The same teams that conduct the household survey also will conduct the supply survey. However, heads of the interviewing teams should be responsible for the supply survey because they will be selected partially on their past experience and ability to elicit responses from business people who are often reluctant to participate, as experience elsewhere has shown. The interview is to be carried out in the respondent's workplace where records can be accessed in response to questions that require quantitative information. Under no condition, however, should the respondent be allowed to answer in writing as this may result in biasing the collected data. If the respondent does not have the time to respond at one point, the surveyer should repeat his trial during a more convenient time.

3.17 The Analysis Plans and Basic Tabulations: These will be conducted using the same logic and logistics as in the household survey.

Analysis of Policy Options

3.18 The large volume of data to be generated from the two surveys of this study will require major analytical efforts to respond to the various policy concerns in a systematic and comprehensive fashion. Since empirically based reports often take a long time to produce and some policy concerns addressed by these surveys require an immediate response, a special format for reporting the findings should be considered. Under the circumstances, a series of working papers is proposed to fill the gap

between the basic tabulations and completion of the main report. Each working paper would explore one of the six major themes so far identified: (1) woodfuel development; (2) household options in energy conservation; (3) improving the efficiency of cooking equipment; (4) impact of energy pricing policies on households; (5) distribution of petroleum products for household use; and (6) the socio-economic impact of rural electrification. The list is by no means exhaustive. Other relevant themes may emerge in the course of the study.

3.19 Woodfuel Development - Policies and Options: Moroccan policymakers have recognized for a long time the need to respond to the country's creeping deforestation. However, little is known about the extent of woodfuel use, especially in the household sector, and the only major authority in this area has been the Forestry Administration of the Ministry of Agriculture. A working paper identifying the factors responsible for deforestation would be invaluable in identifying future remedies in the forestry sector and help authorities to pursue concerted priority activities in that sector. The paper will use the results of a comparative LANDSAT study (expected to be available at the end of 1986) as well as survey data to measure the impact of each factor responsible for deforestation and explore their policy implications. The paper will include discussions of the present efforts to develop woodfuels and production, the techniques employed to harvest fuelwood and produce charcoal, and ways to improve the present system of fuelwood distribution, if need be.

3.20 The most difficult factor barring effective solutions in woodfuel development undoubtedly has been the public perception that fuelwood is a "free good". To a large extent, the Moroccan constitution nurtures this view as it confirms that forests belong to the people. It is this free access that has led to overexploitation of forest resources in some cases. Unless ways are found to replenish the forests, the degradation may not be possible to reverse, as seems to be the case in a number of West and East African countries. Some fees or taxes on forest products should be seriously considered. Results of the proposed surveys may shed some light on the level and possible impact of such fees. For example, the level of stumpage fees required to curtail overcutting may be assessed and charcoaling and/or transport fees collected so that the real cost of sustainable fuelwood production is incorporated in the final price of firewood and charcoal. Revenues collected in this fashion may be used to finance reforestation and afforestation efforts. The paper should consider the institutional mechanisms for determining and collecting relevant fees and taxes. Finally, the implementation of intensified controls on woodfuel flows, particularly for urban supply routes, should be examined.

3.21 In parallel with efforts to attach a price to fuelwood, the possibility of commercial forestry development should be considered. The success of commercial ventures in both maintaining and augmenting forest resources in countries like the U.S., Canada, Sweden, and Finland should provide instructive examples for Morocco. The proposed working paper should look into whether appropriately priced wood products, including

woodfuels, would provide a sufficiently attractive potential for active private sector participation. The paper should also consider the proper institutional mechanisms for maintaining and augmenting forest resources, including joint ventures with corporations from lumber exporting countries.

3.22 Household Options in Energy Conservation. As households account for 52% of total energy consumption, concerted conservation measures could produce significant savings for the economy at large. Conservation in households could result from adopting various measures, all of which would have the ultimate effect of reducing the average amount of energy used per household without significantly reducing its well-being. Price adjustments will be the subject of a separate working paper, as will improvements in fuel efficiency from using different cooking equipment. Beyond these two measures, there will be a host of other options to pursue including, but not limited to, the following:

(a) economizing on non-cooking end uses (e.g. water and space heating, lighting, ironing, etc.) by modifying existing equipment and introducing new, more fuel efficient equipment;

(b) improving the design of new housing and construction material, and introducing affordable insulation methods for existing houses; and

(c) implementing a program of public education and extension to promote conservation through more efficient energy-use habits.

3.23 Each of the above options should be assessed within a quantitative framework so that the costs and benefits of each can be estimated, if only roughly. It should be noted, however, that in regard to option (c), the government carried out a publicity campaign in 1984, but the effects on household awareness and behavior are not known since no follow-up was undertaken. The proposed working paper should investigate this point.

3.24 Cooking Equipment - Efficiency in Household Use: Even though improving the efficiency of cooking equipment is part of managing demand in households, it deserves a separate analysis because of its importance and complexity. The proposed working paper will consist of two parts: an assessment of cooking practices and equipment presently used in households, and an evaluation of alternative equipment needed for substitute fuels. Regarding current practices and equipment, the paper should:

(a) Evaluate the technical efficiency of current stoves and cooking equipment;

(b) Describe the production and marketing structures of cooking equipment;

(c) Redesign and pilot test cooking equipment and their production methods, if necessary, to achieve fuel savings;

(d) Develop a strategy to introduce improved equipment using the present system of production and marketing, emphasizing small/medium-scale entrepreneurs; and

(e) Address the orientation of cooking habits to more efficient energy use through public education and direct extension and demonstration.

3.25 The second part of this working paper would:

(a) Identify economically and financially competitive household fuel substitutes (to determine later whether this item merits a separate working paper);

(b) Test stoves using locally available substitute fuels, to establish optimum design;

(c) Conduct social acceptability tests after modifying the design of stoves to suit Moroccan tastes and family budget constraints;

(d) Assess the potential for a domestic industry to produce the newly identified cooking equipment; and

(e) Outline a strategy for marketing and distributing the new equipment.

3.26 The Impact of Energy Pricing Policies on Households: Energy price adjustments have long been advocated as an effective way to manage energy demand. Moroccan energy prices have been increased over the past few years for some fuels to levels close to their opportunity costs. Three major exceptions are electricity, fuelwood and LPG. Electricity tariffs for low voltage use (relevant to households) have generally been set lower than tariffs for other voltage use and the amounts of their adjustment have also been less. Fuelwood prices are substantially lower than economic costs because prices are determined more by the costs of harvesting, transport, and distribution than by the cost of replacing fuelwood resources. Retail LPG prices are substantially lower than their economic prices because cross subsidization has been used to make LPG affordable to large numbers of households. To the extent possible, the study should trace the effects of past changes in the prices of commercial fuels on patterns of household energy consumption and ascertain the implications of further adjustments in the prices of fuelwood, electricity, and LPG, e.g., inter-fuel substitution.

3.27 Supplying Petroleum Products for Household Use: There are 27 petroleum product distribution companies, most of which are 51% owned by Société National de Produits Petroliers (SNPP) and 49% owned by foreign companies. The remaining distributors are owned by private Moroccan interests. The distribution system suffers from two major problems: (a) fragmentation; and (b) too much regulation that keeps the Government involved in the day-to-day operations of the distribution companies. How much these and other problems affect the ability of distribution companies to satisfy household energy needs is not known in sufficient detail to guide policy formulation in this area.

3.28 Structural problems in household energy supply may arise because supplies are unattainable or irregular or because retail prices of petroleum products are set at levels beyond consumers' ability but too low to provide suppliers sufficient incentives. Supplying petroleum products to households involves three related processes: procurement, marketing, and distribution. Procurement issues may result from foreign refineries and/or local refineries. The marketing difficulties may result from market size, structure, preferences, or growth prospects. The distribution concerns may turn out to be either in the locational mismatch between storage centers and consumption centers or in physically moving the products from storage depots to households. In each of these supply processes, two considerations are to be studied: management and infrastructure. The objective is to identify the stage at which the supply-related bottlenecks occur.

3.29 Comparing household demand for petroleum products (as it will emerge from the survey) with existing supply patterns will identify the extent, if any, of the mismatch between demand and supply for petroleum products on a regional basis. Targeted policy and operational measures to correct such imbalance(s) will be discussed in the paper.

3.30 Socio-Economic Impact of Rural Electrification: In 1979, the World Bank approved a $42 million loan (1695-MOR) to finance the first phase of the Programme Nationale d'Electrification Rurale (PNER). The principal objectives of the program were twofold: (a) to increase the rural population's access to electricity; and (b) to improve the productivity of the agriculture sector. The first phase was designed to extend electric service from the national grid to approximately 220 rural centers located in eight northern provinces, three central provinces and five southern provinces. The goal was to provide electricity to about 360,000 rural inhabitants. At present, the first phase is nearly finished and preparations are under way for the second phase. A Project Completion Report covering the first phase will be prepared evaluating technical, financial, and economic results. However, that report will not provide answers to a number of questions relating to the socio-economic impact of the project. Such an analysis is needed to determine the nature and scope of a second phase of the program (PNER II) and plan for supplying electricity to households.

3.31 To generate this valuable information, a policy working paper is proposed which will examine the socio-economic consequences of the PNER

electrification effort. The paper should cover the following topics:

(a) the demographic impact: size and growth of population and family; fertility rates; and rural-urban migration;

(b) the impact on income and wealth: changes in household incomes and assets; sources of employment and income; and number of employed persons per family;

(c) the impact on infrastructure: roads, water supply systems, canals, schools, health centers, etc.;

(d) the impact on economic structure: rural activities that were especially affected by electrification;

(e) the impact on patterns of household energy consumption: load factors, lighting, refrigeration, appliances, heating, etc.; and

(f) the cost of electricity sales to rural households: tariff structure, taxes, connection charges and monthly costs of service and billing; explanation of the slow rate of new connections; examination of the constraints to rural electrification (low income, high internal/wiring costs, connection charges, etc.).

3.32 A statistically representative sub-sample of newly electrified communities would be drawn. To the extent possible, pre-PNER data on the above items would be compiled from secondary sources. Comparing these with the results of the survey should help to identify the relevant socio-economic changes. Based on this information, the proposed policy paper would recommend measures to improve the planning of the next phase of the PNER program, as well as measures to increase the beneficial impact of rural electrification.

Strategy Formulation

3.33 Tabulating the results of both the household survey and the energy supply system survey and developing policy-oriented working papers would provide the basis for formulating the household energy strategy. Such a strategy would contrast patterns of energy demand and supply for households to arrive at a detailed action plan with agreed priorities, costs, and implementation schedule. Strategy formulation should include the set of institutional reforms necessary for the government to better integrate energy policy decisions among the agencies discussed in paragraph 1.4.

IV. INPUTS: ORGANIZATION, TIMING, COSTS, AND FINANCING

4.1 Staffing and Supervision: The strategy work will be carried out as a joint effort of the Government of Morocco, USAID, and the World Bank. Moroccan consultants will be used wherever the expertise of local conditions is specifically recommended, such as in designing the samples and conducting the field surveys. The formulation of a household energy strategy will require the inputs of many local and international experts with wide-ranging specialties: economists, statisticians, computer programmers, foresters, agriculturalists, distribution/marketing specialists, sociologists, etc. Staff of the World Bank will manage the project by providing the following inputs: defining the scope of work for the study as a whole, developing terms of reference for consultants, establishing consultants' short lists according to Bank guidelines, reviewing consultants' reports and other inputs, coordinating inputs of various participants, providing quality control over the project's output, and monitoring work progress throughout. Staff of USAID will provide back-up field support, monitor the on-site progress of work, and contribute to quality control of documents generated in this project. The Government will provide direct staff inputs into: reviewing the design of both the household sample and the supply sources sample; formulating the questionnaires for the two surveys; developing the Policy Working Papers; and reviewing other project documents. In addition, the Government will facilitate the field work of the survey team, whether during the pilot testing phase or during the successive rounds of the full survey.

4.2 An inter-ministerial Task Force has been established in March 1986 under the leadership of the Ministry of Energy and Mines (MEM) to oversee and monitor the study locally. The Task Force is comprised of all the ministries and governmental agencies concerned with the study:

(a) MEM: as the principal authority to set energy issues within one consistent framework;

(b) Ministry of Agriculture, through its Direction des Eaux et Forets: as the main party responsible for forest and woodfuel development;

(c) Ministry of Interior, and its Administration de Regies: as the authorities responsible for working with the local and provincial governments in energy-related matters;

(d) Ministry of Planing and its Direction de la Statistique: because of the need to work within the already established statistical master sample to acquire relevant data from the recently completed family budget survey and to integrate results of the study with the country's sectoral and macro plans; and

(e) Ministry of Economic Affairs: as the entity responsible for coordinating the work of

governmental agencies and international agencies.

4.3 To initiate the work plan, a Bank mission visited Morocco in April 1986 and discussed the conceptual design of the study with the GOM, agreed on the scope of related work, and reviewed the capabilities of qualified Moroccan consultant firms to carry out the necessary work, including sample design and selection, as well as field surveys and associated logistics. The present document is the result of those deliberations, during which it was recognized that the creation of a "field manager" position would be essential for the success of the effort. The complexity of the study and the large number of participants require the presence of a full-time field manager to handle the daily flow of related work, coordinate the inputs of government agencies and consultants, monitor the work progress on several fronts, plan for work ahead, and resolve issues arising in the course of project implementation. The Task Force agreed with the Mission's recommendation to recruit a field manager for the study. At the request of MEM, the Mission provided draft Terms of Reference for the manager's scope of work, criteria for his selection (see Annex I), and prepared a long list of suitable candidates for the position.

4.4 Required Inputs: The efforts identified in para. 4.1 above will require substantial consultant inputs and therefore a source of financing to fund the package. As USAID has expressed interest in co-financing the study, the Mission held intensive discussions with USAID field staff stationed in Morocco and worked out a formula whereby both GOM and the Bank contribute staff resources, and USAID contributes mostly financial and some staff resources. The participants reached an accord on the breakdown of the proposed contributions for the life of the project which may be summarized as follows:

Source	Contribution	Activities
GOM	60-80 Staff Weeks	All, except those financed by USAID
BANK	80 Staff Weeks	All, except those financed by USAID
USAID	$400,000	Survey work, $220,000 Field Manager, $80,000 Consultants, $100,000

4.5 Policy analysis will be aided considerably by results of the survey, but preparations for this analysis need not wait for those results in order to commence. Much time is needed to prepare the groundwork for policy papers, review relevant studies (for Morocco and elsewhere), collect data from secondary sources, and formulate specific hypotheses for testing against survey results. To wait until results come out to start these preparations would waste valuable time. Therefore conceptual design and preparations for policy papers should commence in parallel with preparations for the survey itself. By outlining policy papers at the outset, the relevant issues are identified. Implicitly, the data required to address those issues are

also identified, and that in turn can be reflected in formulating the questionnaire. This process has important implications for the design of the samples underlying the survey work because the statistical reliability of the results depends partly on the number of observations made to cover a certain point. This methodology assures that the questions that need answers are the driving force behind both questionnaire formulation and sample design. In most other empirical surveys of this type both the questionnaires and samples act as constraints to the questions that could be answered.

4.6 Timing: The projected schedule for survey work, policy preparation and strategy synthesis appears in figure 4.1 and is summarized below:

Activity	Proposed Schedule		Remarks
	Starting Date	Ending Date	
Activity Initiation Brief	Jan '86	Feb. '86	Completed
Field Mission	April '86	April '86	Completed
Preparatory Work	May '86	June '86	Completed
Outline Policy Papers	May '86	July '86	
Samples Design	June '86	Aug. '86	
Questionnaires Design	June '86	Aug. '86	
Pilot Test	Sept. '86	Sept. '86	
Analysis Plans	Sept. '86	Dec. '86	
Full Survey - Round I	Dec. '86	Jan. '87	
Round II	April '87	April '87	
Round III	July '87	July '87	
Tabulations - Round I	Jan. '87	March '87	
Round II	May '87	June '87	
Round III	Aug. '87	Sept. '87	
Policy Papers	Jan. '87	Dec. '87	
Draft Report Synthesis	Sept. '87	Jan. '88	
Final Report	Feb. '88	June '88	

INT/83/005
6/27/83

Back to office report

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

DATE: June 27, 1986

TO: Mr. Bernard Montfort, Division Chief, EGYS1

FROM: Willem Floor and Jacqueline Shanberge, EGYS1

EXTENSION: 75425, 75535

SUBJECT: ESMAP: France/Niger/Senegal Mission
(May 27, 1986-June 6, 1986)
Back-To-Office-Report

1. The objectives of this mission were to meet with Government officials and project members: to review the progress of three projects - two in Niger (The Improved Stoves Project; UNSO Household Energy Substitution and Conservation Project - including its part in the Energy II Loan) and one in Senegal (Industrial Energy Conservation Project) and to discuss with Government officials two proposed projects for Senegal (Solar Water Heating; and Household Energy Strategy Study). In addition, meetings were held by Ms. Shanberge in Paris with members of TRANS ENERG to discuss the Senegal Industrial Energy Conservation Project for which the firm is carrying out the work of the first year. (Refer to Annex 1 for a list of persons met in each country).

France

2. The discussions held with members of the consulting firm TRANS ENERG concentrated on the points made in a letter from the Bank to TRANS ENERG dated May 23, 1986.

(a) Institutional Environment Study. It was made clear and agreed by both parties that the work first completed for the Institutional Environment was unacceptable not only in content (as demonstrated in the inception report) but also in the manner in which the work was carried out. Thus, it was agreed by both parties that the Bank would not approve any payment to cover the costs for this work. In addition, it was agreed that the Bank would hold payment of the April tranche until it was demonstrated in a second inception report that the second effort was of much better quality.

(b) Production of Reports. It was agreed that the present method of report production was inefficient and caused unnecessary delays. For subsequent reports, the text will be typed in Senegal and copies sent to France at the same time they are submitted to the Government. Comments will be incorporated in Senegal and the final approved version will be sent to the Bank from Senegal through the World Bank pouch.

(c) Submission of itemized statement. TRANS ENERG had already submitted the statement to the Government for review. However, the costs for the first effort in the Institutional Environment Study were included. It was agreed that these costs would be removed from the statement and then upon Government's clearance, the Bank's loan department could proceed with reconciling the July tranche with expenses already incurred.

Niger

3. The agreements made with the Government concerning the UNSO Household Energy Substitution and Conservation Project and the Improved Stoves Project were summarized in an Aide Memoire (Annex 2) cleared by the Government with copies left for the Government, the World Bank and UNDP Resident Representatives and the coordinators of the two projects.

Improved Stoves Project

4. As noted in the Aide Memoire, the Mid-Term Stove Report was cleared by the Government for publication. In addition, at the Government's request, the mission agreed to formulate a work plan and budget for the work to be done between the end of the two-year project and the commencement of the Energy II Project so as not to lose momentum.

5. A meeting was held with the Promotion Expert to pick up new project reports (the Second Version of the Sensitization Follow-up Survey; and the Fourth Quarterly Report Covering the Fourth and Fifth Quarters), the television spot, cassettes recording the songs written for the project, and the documentary film. All were obtained except the film which had been sent for a viewing in France by the Niger TV. As the project has paid for and produced the film, the film should be available to the project at all times for the sensitization and promotion activities. Measures are being taken to ensure its availability.

6. It was agreed that the Stove Technologist for the Project would assist with the market testing of the Mai Sauki Modifié and the Mai Sauki with chimney during the first two weeks in July.

UNSO Household Energy Substitution and Conservation Project

7. Meetings were held with the Director of Energy, consultants for the project and with experts working on a parallel project on coal. The UNSO project is proceeding well. There has been excellent coordination with the Government (participation of the Nigerien counterparts has been quite commendable). The outline of the strategy has been formulated taking into account the three principal elements (conservation, substitution and woodfuel management) as well as overall policy. In the remaining period, the project team will flesh out the strategy which will be presented in a final report in the first part of August 1986.

(a) Conservation. This part of the strategy will be based on the current experience of ESMAP and AFVP in their work with improved stoves both in urban and rural areas. In particular, the issue of subsidies will be addressed to accelerate diffusion of stoves. On this point, during a visit to a small rural village, the villagers noted their interest in purchasing improved wood stoves. The syndicate of wood suppliers, upon being asked, noted that they would be interested in participating in the diffusion of stoves by returning from Niamey with improved stoves for sale in the village. The participation of the wood suppliers will be followed up by the project experts.

(b) Substitution. Work being done under the PUSF study indicates that wood resources for Niamey are sufficient to cover supply for 40 years at 60% of demand if well managed. Therefore, 40% of remaining household demand would have to be met by substitution. Preliminary market studies indicate that about 10% of demand may be met by LPG (butane) and 30% by kerosene. Two other potential substitutes (agriculture residue briquettes and coal) do not show much promise.

(i) LPG. The main obstacles for LPG are its high price, the country's limited storage capacity and supply restraints. As a fuel, LPG has been well received by users as it is clean and fairly easy to use. The stove technologists have made modifications in stoves purchased in Senegal such that three Nigerien kettle sizes (2, 3 and 4 - the most frequently used sizes) can be accomodated and the burner is protected minimizing the danger of being hurt by the fire. These stoves are presently being tested for social acceptability.

(ii) Kerosene. Kerosene does not have the same supply problems as found with LPG and it is also less costly for the consumers. The user acceptability of kerosene had not as yet been tested in that the kerosene stoves ordered in March from India had not arrived due to negligence of suppliers. Kerosene stoves from Kenya and Indonesia were ordered to arrest this problem. Upon their arrival, the stoves will be tested in the lab, modifications made and social acceptability tests will be performed in the households. However, preliminary conclusions based on previous work done on kerosene stoves by the stove technologists and on the results of tests carried out in Niger of European kerosene stove models, 3-4 kW stoves are needed and stoves with this high of a power output do not exist. Thus, it was agreed with the Government to allocate US$30,000 to finance the development of a 4 kW prototype by the Woodburning Stove Group over a four month period, to be ready in January, 1987.

(iii) Briquettes. It is highly unlikely that agriculture residue briquettes will contribute to substitution in that the supply is very limited and unreliable and the cost of production of briquettes is prohibitive.

(iv) Coal. Based on discussions with the Canadian experts carrying out a coal study, it became apparent that their study during the first phase is concentrating primarily on assessing the potential exploitable reserves and would not test the product in the market or in the lab. Only at a later stage, possibly in 1987, would laboratory tests be done with washed raw coal samples from Anou-Arraren and an effort would be made to cokify the coal and test it under conditions similar to those being used in the UNSO project for LPG, kerosene, wood and briquette tests. In preliminary tests performed during the mission it was found that the washed raw coal, due to its very high ash content, is extremely hard to light and once burning emits a highly noxious, irritating smoke and has a very low power output.

(c) Management. The PUSF estimates that available wood resources around Niamey could be exploited on a sustained basis for over 40 years if managed well implies that prior to exploitation, a cut area is protected for three years with that area kept off limits to man and animals. This type of management calls for villages and wood suppliers to work together to affect protection and management with the Government acting as overseer. A pilot project is being formulated with US$20,000 from the project to evaluate the viability of a fuelwood cycle control system.

8. The issue of purchasing a computer for the remainder of the project and for the subsequent Energy II Project was discussed with Government officials. A list of needs and personnel available to operate and work with the computer was supplied by the Government (Attachment 2 of Aide Memoire - Annex 2). This list is being reviewed and a decision to purchase a Micral computer will have to be made shortly.

9. Concerning the question of "primes," after lengthy discussions with the Government and Resident Representatives of the UNDP and the World Bank, it was decided not to give pre-agreed upon fixed monthly primes. This was noted in the Aide Memoire.

10. A Budget Revision for the UNSO project was agreed upon with the Government and the UNDP Resident Representative (refer to Aide Memoire in Annex 2 for details) and will be drawn up formally at Bank headquarters.

11. The consultants interim report for this project is to be submitted to the Bank before the end of the month. The due date has been moved up due to delayed arrival in Niger of LPG/Kerosene Report and Briquettes Report.

Energy II Loan

12. Two main areas of concern in relation to the preparation of this loan were discussed. The first was the possibility of collaborating with bilateral donors to co-finance and/or co-execute the Household component of the Loan. For example, on our return we found that one such opportunity has already arisen with CIDA's interest in working on a regional basis on managing the land and developing energy resources (mentioned in Mr. Wilton's (WAPEG) Back-to-Office-Report dated June 17, 1986). The second point was on the choice of the director for the Household part of the Energy II loan. The Government would like to propose a Nigerien for the post.

Senegal

13. The principal dicussions held in Senegal were about the Industrial Energy conservation Project. The mission also discussed with appropriate Government officials the Solar Water Heating Project and the Household Energy Strategy Project.

Industrial Energy Conservation

14. Concerning this project, discussions with the Government of Senegal, UNDP/UNIDO and the project consultants centered around the following six principle issues: Institutional Environment Study, financing of the NOEC, staffing of the NOEC, Government's not providing facilities, audit program, and timing of next mission. The first issue discussed was the Institutional Envirnment Study. All parties concerned agreed with the Bank's position that the initial work completed and summarized in the Preliminary Report was unnacceptable. The second attempt has led to the production of an adequate inventory of baseline data on the Senegal situation. One of the suprising outcomes of this work is the discovery that Senegal does have an Energy Conservation Law about which the MDIA is totally unaware. The law not only is unknown, but also has no implementation regulations which the consultants are currently drawing up. By the beginning of July 1986, the final report for the Institutional Study will be ready and submitted to the Government for clearance.

15. The second major issue centered around the financing of the New Office of Energy Conservation (NOEC) and the funds for financing the required investments identified in the audits. The findings of the consultants leaves no doubt about the fact that during the initial years, the NOEC will have to be financed by external funds. The Government has no money, and beyond a token contribution, would be unable to contribute a significant part of the cost. The mission made it clear that such

external financing could only be a temporary arrangement. The consultants must identify the means by which the NOEC after some five years could become self-financing. Several possibilities were discussed which will have to be checked out as to their feasibility in the Senegalese context.

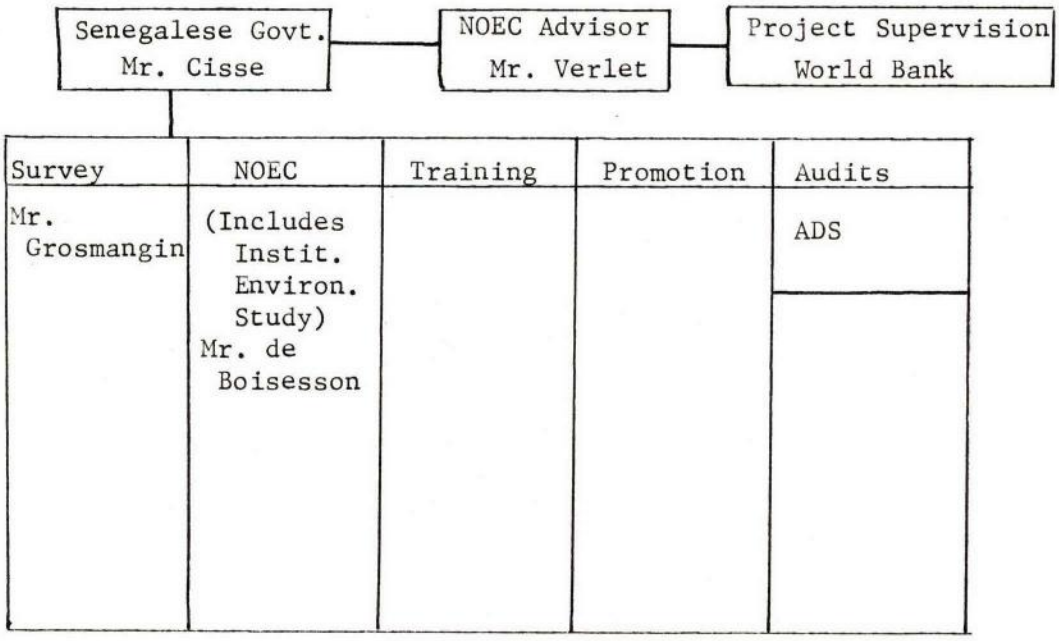
16. The need to finance investments was central in the discussions with the Government. The availability of credit will convince industry that the Government is serious and ensure industry's committment although energy conservation is, understandably, not the top priority for the industry. The Government of Senegal suggested that the Bank make available for investment purposes the US$1.9 million of the Energy Loan earmarked for this project. The Government also requested ESMAP assistance in identifying investment funds, and, in particular, in assisting the NOEC to prepare investment plan for an Industrial Sector Donor Meeting tentatively scheduled for 1987.

17. A third important issue is one of adequate staffing for the NOEC. The advisor for the NOEC (Mr. Verlet) has been unable to identify adequate and interested staff in the industrial sector. Good people are scarce and industry takes the position that it will not let them go by offering, if need be, higher salaries. Mr. Cisse, Energy Director, is interested in the job of Director of NOEC. He has taken an active interest in the project, confers regularly with Verlet, initiates news coverage in the media, and actively participates in contacting the industry on the projects objectives. Although he has no industrial background and little practical experience, Mr. Cisse appears to be the only candidate available. We discussed this issue with him, and he confirmed his interest in the job. He at the same time said that if there was someone better that he preferred that the latter be selected. Regarding the staffing of the other positions in the NOEC, decisions will have to be made on the eligibility of the staff of the existing Office of Energy Conservation (OEC). The Government has not made available staff to be trained with the exception of one person who is available, at best, half-time. The other OEC staff are elsewhere for 'training,' a state of occupation in which they have already found themselves for a period of two years. Both Cisse and Verlet felt that things would not improve very much, if the Bank insisted on these people being available. Moreover, the persons concerned, have shown themselves to be negatively interested in NOEC, since they fear that they will not be selected for this organization in view of their lack of competence, interest, and work ethos. Insisting that these people actively participate will lead to delay in project execution and a negative working atmosphere according to both Verlet and Cisse.

18. Following along the lines of the provision of personnel, also discussed with the Government is its inability to provide facilities as agreed in the project document and in the project initiation Aide Memoire. There is still no office and no telephone. Funds are available, but bureacratic procedures are delaying the preparation of an office for Verlet. This office is now being painted in stages, and will

probably be made available when the advisor is ready to leave the country. Fortunately, Verlet has an apartment close to the MDIA with a telephone and it is from there that he operates. All parties agreed that this was not the best situation, but under the circumstances, the most realistic and effective way.

19. The fifth major point of discussion was the audit program for the project which is being co-financed by CIDA and carried out by the Canadian consulting firm, ADS. Three consultants from ADS joined the mission in Senegal to meet with Cisse and Verlet to outline the audit work program and discuss the coordination of the project. The work program is being further detailed by Verlet and ADS and will be set forth in the ADS contract. It was agreed that the work program would include not only the financially/energetically interesting audits, but also a few of the ones that would be promotionally interesting. The organizational relationship vis-a-vis the project management was made clear to all parties (see diagram below). Verlet, Cisse, and ADS all had misgivings about the ADS position re TRANS ENERG (for which Verlet is working). However, it was made clear that ADS works for the Government. Thus, Cisse decides on all issues, while Verlet will continue to advise him. The relation of the parties involved with the project is shown below. Finally, agreement was reached with ADS on the outlines of the budget, and the contract. ADS also arranged the local logistical needs (office space, etc.), so that the audit program work can begin in Senegal effective as of September 1, 1986.



20. Finally, dates were proposed for the mission to discuss the resulting recommendations of the Institutional Environment Study. Originally, the end of July 1986 was proposed though this date may be too early. The mission would only be held in July if Government is prepared to make formal committments to the recommendations made. Proposed mission members include: (from the Bank) Mr. Mulckhuyse (INDRE) and Ms. Shanberge (EGYS1) and (From the consulting firm) Messrs. Paillat - TRANS ENERG, Verlet - NOEC Advisor, and de Boisseson - Institutional Environment Expert.

Solar Water Heating Report

21. The mission was prepared to discuss this report with the Government, however, the Government requested instead to send their written comments. From oral comments made during the mission, written comments will probably include: (a) role of SINAES and its privatization; (b) institutional problems - relationship of NOEC re SINAES and CERER; (c) high rate of exchange used in analysis; (d) energy pricing subsidies section; and (e) budget.

Household Energy Strategy Study

22. The Government has received and distributed copies of the Activitiy Initiation Brief to the Ministere des Eaux et Forets, the Ministere du Plan and other concerned organizations for comment. However, the Government was not ready to discuss the work plan in detail. The Government stated that in view of the importance of this project, it prefers discussing the study in detail with the next visiting mission rather than submitting written comments. It is unlikely that work scheduled to begin in Senegal in September will be possible given such a request.

cc. Messrs. Hinkle, Murphy (WA1);
Landell-Mills, Fares, Gorjestani, Redfern (WA2);
Bouhaouala, Bauer, Wilton, Menezes, Ouahes (WAPEG);
Gorse (WAPAC); Gabriel (WAPPS); Mulckhuyse (INDRE)
Hume, Bourcier, Sadove, Saunders, Iskander, Fish,
Dosik, Bates (o/r), Kalim, Malik (EGY)
Kaps, World Bank Res. Rep., Senegal
Sanger, World Bank Res. Rep., Niger

Mesdames Martinez, Bendokat (WA1); McAfee (LOATF); Owen, Walsh (EGY)

JShanberge/WFloor:my

Annex 1

LIST OF PERSONS MET

France

TRANS ENERG

Mr. Michel Malherbe	-	President
Mr. Bertrand Paillat	-	Project Manager
Mr. Maurice de Boisseson	-	Institutional Environment Expert

Niger

Ministere des Mines et de l'Energie/Direction de l'Energie

Mr. Issoufou Melly Adam	-	Director
Mr. Richard Knodt, Director	-	GTZ Special Energy Program

Ministere de l'Hydraulique et de l'Environnement/Direction des Forets et Faunes

Cmdt. Amoul Kinni	-	Director of PUSF Project

Consultants on Canadian Coal Project

Mr. Louis Verret	-	Canadian International Development Agency
Mr. Serge Biron	-	Geomines Ltee.

World Bank

Mr. Helmut Sanger	-	Resident Representative

United Nations Development Programme

Mr. Joseph Cavalli	-	Resident Representative
Ms. Sari Suomalainen	-	Projects Officer

Consultant for Improved Stoves Project

Ms. Marion Fischer	-	Promotion Expert

Consultants for UNSO Household Energy Substitution and Conservation Project

Mr. Gerard Madon	-	Economist
Mr. Michel Matly	-	Marketing Specialist
Mr. Paul Bussman	-	Stove Technologist
Mr. Piet Visser	-	Stove Technologist
Ms. Mariama Gamatie	-	Sociologist

Senegal

Ministere du developpement industriel et artisanal

Mr. Saloum Cisse	-	Director of Energy
Mr. Bocar Thiam	-	Advisor
Mr. Hassane Segou N'Diaye	-	Engineer, Office of Energy Conservation
Ms. Nade Dreyhaba Djigueul	-	Economist

Consultants for Industrial Energy Conservation Project

Mr. Jacques Verlet, Advisor	-	NBEE
Mr. Maurice de Boisseson	-	Institutional Environment Advisor

Canadian Consultants

Mr. Louis-Philippe Lavoie	-	ADS
Mr. Charles Frenette	-	ADS
Mr. Pierre Regamey	-	Econolier

World Bank

Mr. Franz Kaps	-	Resident Representative
Mr. Sangone Armar	-	Operation Assistant

United Nations Development Programme

Mr. Salif N'Diaye	-	Resident Representative
Mr. Djamel Mostefai	-	Principal Industry Advisor, ONUDI

F-338

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
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INT/83/005

June 26, 1986

Counsellor Giovani Ferrero
Department for Development Cooperation
Ministry of Foreign Affairs
Rome - Via Contarini, 25
ITALY

Dear Dr. Ferrero:

Pursuant to our recent discussions in Washington, D.C. with Drs. Cristina Natoli and Giovannangelo Montecchi Palazzi of the Italian Ministry of Foreign Affairs, I wish to confirm our interest in collaborating with your organization on a proposed preinvestment study to evaluate the economic and market potential in India for solar photovoltaic systems.

I am enclosing for your review, a draft of the activity initiation brief which outlines the scope, objectives, and detailed terms-of-reference for the proposed study. You may recall that an earlier outline of the terms-of-reference for the study was transmitted by telex to you in January 1986.

As we indicated to Dr. Montecchi the proposed study on solar photovoltaic systems is one of three preinvestment studies to be initiated on India over the coming year by the World Bank through the joint UNDP/World Bank Energy Sector Management Assistance Program (ESMAP). The other two studies, which we envisage will be funded by DANIDA, will evaluate the economic and market potential of solar water heaters, and wind power generators respectively. We have discussed our proposals with Mr. Dayal, the Secretary for Non-Conventional Energy Resources in the Ministry of Energy in India, who concurs that the studies would help the Government of India to identify significant fuel displacement and investment opportunities for the selected renewable energy technologies.

We are also committed to assisting the Government of India with its Seventh Five Year Plan objective of formulating and implementing a comprehensive program to accelerate renewable energy development in India. In this regard, we believe that the above preinvestment studies will serve as appropriate models for evaluating and defining strategies for disseminating other viable renewable energy technologies in India. We propose to begin a Renewable Energy Sector Study in the near future, possibly soon after the completion of the three preinvestment studies. One of the principal objectives of this sector study would be to identify the possible role(s) for multilateral and bilateral agencies in financing and providing technical assistance for renewable energy development in India.

The study on solar photovoltaic systems will be supervised and monitored by World Bank staff. Given the expertise that has already been developed in Italy in the field of solar photovoltaic systems, we expect to hire some consultants from Italy to work on the study.

As indicated in the attached paper, the output of the study will be a detailed report supported by two volumes of technical supplements. The report will present a detailed plan for the dissemination of solar photovoltaic systems on a commercial basis in India, and also define the requirements to proceed with a Pilot Demonstration Project along the lines discussed with Dr. Montecchi. We therefore expect that the report will provide a basis for your organization to further define components of your Government's proposed program to support solar photovoltaic system development in India.

We expect to initiate the proposed study during the third quarter of 1986 and to complete it within twenty weeks. We estimate that the study on solar photovoltaic applications would cost about US$ 90,000 to implement. Should the Italian Government agree to contribute the amount, we would then make arrangements to establish within the World Bank, a "Trust Fund" account for the study.

Of the total cost of the study, we will use about US$ 15,000 to cover the cost of direct travel, subsistence and related expenses of Bank staff, while the remainder will be paid to cover the costs of consultants and report preparation.

I am also enclosing two other documents for your perusal. The first is a draft activity initiation brief on a similar solar photovoltaic applications study on Pakistan which we plan to begin as soon as we have secured funds to supplement a US$ 45,000 contribution from the United States Trade Development Program. The second is a copy of the final ESMAP report which justifies a US$ 0.6 million solar photovoltaic applications project to upgrade the reliability of rural health care and telecommunication services in the Gambia.

We look forward to your reaction to our proposal on India. We will keep you informed of developments regarding the proposed study.

Sincerely,

Jochen Schmedtje

Jochen Schmedtje
Acting Chief,
Energy Strategy
and Preinvestment
Division II
Energy Department

Enclosures

cc: Drs. C. Natoli and G. Montecchi Palazzi
Department for Development Cooperation
Ministry of Foreign Affairs
Rome, ITALY

bcc: Messrs. Hume, Montfort, Bates (o/r), Malik (o/r) (EGY);
Pollak (ASA);
Kiermayr (VPCAU)

AA:vh

DRAFT

Joint UNDP/World Bank
Energy Sector Management Assistance Program

INDIA

PRE-INVESTMENT STUDY ON SOLAR PHOTOVOLTAIC APPLICATIONS

ACTIVITY INITIATION BRIEF

June 1986

Energy Strategy and Preinvestment Division II
Energy Department
World Bank
Washington, D.C. 20433

TABLE OF CONTENTS

I. OVERVIEW

Objectives

1.1 The main objective of the proposed pre-investment activity is to determine the scope for and technical/economic feasibility of applying solar photovoltaic systems in India. In this context, the following areas will be covered under the proposed activity:

(1) Assessment of technical and economic viability of various solar photovoltaics (PV) applications, e.g., water pumping, rural telecommunications, educational TV, refrigerator for health centers, rural electrification and grid interfaced electrification. The assessment will be based both on the present (1986) and the projected (1990) status of the PV technology. Major emphasis, however, would be placed on the present market.

(2) Estimation of the present and projected market size for each technically and economically viable application.

(3) Detailed production plan to manufacture and/or assemble PV cells/systems within the country. All relevant solar cell production technologies will be considered to respond effectively to the present and the projected market needs.

(4) Identification of policy measures, e.g., initiating a demonstration program and public information campaign, setting up of institutional mechanisms, financing, credits and incentives, waiver of custom duties on imported solar components.

(5) Development of a fully costed and time phased optimal PV program for adoption in the country. Included in it will be the investment needs and the associated rates of return to determine the suitability of the program for financing by lending agencies.

Background

1.2 Renewable energy resources meet about 40% of India's total energy needs, primarily those of the rural and household sectors. Demand substantially exceeds supply of both fuel wood, crop residues and animal waste, with the result that deforestation is worening and an increasing proportion of waste nutrient are being lost to the soil. Recognizing that other renewables (solar, wind & other biomass technologies) may have the potential of making an important impact on energy supply in the country, the Government of India (GOI) has decided to formulate a program for renewable energy which during the Seventh Five Year Plan would emphasize:

(a) accelerating the development and utilization of renewable energy resources, where economically and technically feasible;

(b) improving access to and supply of decentralized energy resources, such as solar, wind, biogas and biomass energy.

1.3 The World Bank, through the joint UNDP/World Bank Energy Sector Management Assistance Program (ESMAP), proposes to assist the GOI in this effort. In order to define an appropriate strategy for such assistance, a sector study will soon be initiated which would: (a) critically review the GOI renewables strategy, based on analysis of relevant documents plus interviews with key individuals and agencies in the field; (b) recommend appropriate re-orientation of the GOI strategy in terms of its role in overall energy picture, appropriate priorities between the different renewable technologies, financing mechanisms, and other measures necessary for expedient commercialization of various technologies, etc.; and (c) identify the possible role for multilateral and bilateral agencies in financing and providing technical assistance in the renewables subsector of India.

1.4 Prior to the initiation of the renewable energy sector assessment, ESMAP has agreed with GOI to carry out detailed pre-investment studies to evaluate the economic and market potential of three applications: solar water heaters, solar photovoltaic systems, and wind power generators. These would identify significant fuel displacement and investment opportunities and possibly serve as models for work on other renewable energy technologies, and as the basis for defining a comprehensive strategy. The first activity in this series will cover solar photovoltaic (PV) applications.

1.5 This brief outlines the essential elements of the proposed activity which is estimated to cost US$ 90,000, and to require about 20 man-weeks of the services of a team of three specialists. The detailed scope of work, the organization of assignments, and the budget are presented in the remaining sections of this brief.

II. SCOPE OF ACTIVITY

2.1 The scope of work in this study will comprise a number of tasks which are outlined below. The following potential applications of solar PV systems will be evaluated:

(a) rural water supply, including for livestock;
(b) rural telecommunications;
(c) refrigeration of vaccines;
(d) cathodic protection; and
(e) isolated rural electrification for lighting and for educational TV.

2.2 The methodology used by the consultants will comprise: (a) interviews with agencies and individuals within India who would have a bearing on the development of PV systems technology; (b) field visits to a number of potential sites for installing PV systems for various applications, the sites to be visited by the consultants should constitute a large enough "sample" from which extrapolations can be made to arrive at reliable countrywide projections for the use of PV systems in India; and (c) field visits to a number of potential Indian manufacturers of PV system components (such as support structure, electrical hardware); (d) analysis of field data through the use of latest computer simulation techniques; (e) development of recommendations to the GOI; and (f) preparation of an ESMAP report.

Task 1: Solar Resource Assessment and Data Gathering

2.3 The consultants will review the availability of solar radiation and other climatic data in the country, especially in remote areas where PV systems are most likely to be used. The assessment of resources will be based on a review of existing solar radiation and other climatic data from different meteorological stations in the country, the data collected by various national and international agencies (i.e., NOAA in the U.S.; the W.M.O., etc.) Through a review of the solar resource, and field visits, the consultants would identify prime areas of the country where PV systems can be used. The consultants would seek to identify a number of sites (probably three for each type of PV system application) for demonstration projects. Additional resource measurements may be recommended for areas which have good potential for the use of PV systems. Some of these sites may serve as candidates for future applications of PV systems. The information from the agriculture sector (e.g., cropping patterns, crop types used, water requirements, crop rotation, land requirements for animal feed, social implications of alternative methods of water pumping) will also be collected.

Task 2: Market Potential Assessment

2.4 The consultants will assess the present (1986) and projected (1991-1996) market size for the selected PV applications (para 2.1 and Annex 2). The 1991 market size will be based on today's PV technology so

as to arrive at definitive -- albeit somewhat conservative estimates. The 1996 market size estimates will, however, take into consideration the projected developments in the PV systems technology.

Task 3: Technical Costs and Economic Evaluation of Options

2.5 For a select number of potential PV system applications, the consultants will perform detailed technical and economic evaluations using methods which include computer simulations. In these simulations, the climatic data from a number of sites; electricity load/use profiles and other related technical characteristics of the concerned application, plus the characteristics of a number of viable PV systems will be studied. Commercially available PV systems and components (e.g., PV modules, batteries, controllers, water pumps, lamps, etc.) from a number of sources of supply (e.g., USA, Japan, U.K., France and Italy) will be evaluated. The simulations will predict the output of the PV systems (e.g., electricity or water for pumping systems), and fuel displacement potential, under different operational scenarios, which when coupled with the data on imports/production and economics of PV systems optimal PV systems (e.g., size), configuration of various subsystems and of the entire system for various applications at different sites will be determined. The number of simulations will be large enough to help determine in definitive terms the economic viability of PV systems on the one hand and draw reliable estimates of the current and projected market sizes, for PV systems on the other.

2.6 In designing an optimal PV system for a particular application, the installed cost is an important consideration in addition to the system's technical performance (Annex 1). The cost is in turn dictated by whether the components are imported, manufactured or assembled locally. The consultants will identify an optimal mix of imports, locally manufactured and assembled components for each of the various applications so as to arrive at the most cost effective system. The consultants will also identify a broad time-phased plan for PV system applications in the respective country. It is expected that in the beginning and, especially for the first few demonstration projects, almost all the components (except for support structures and battery enclosures which will be locally built) will be imported and with the passage of time, local assembly and perhaps even some local manufacturing may be found appropriate.

2.7 The consultants will determine for the simulated systems, relevant economic and financial rates of return. These analyses will determine the economic viability (or otherwise) of various PV system applications from the GOI's standpoint and, where relevant, also from the consumer's standpoint. For those applications which are found cost effective and where consumer financing is needed, the consultants will develop viable load packages, mutually acceptable to the consumer and to GOI. One guideline that the consultants could use in this regard is that the monthly debt service will not exceed the savings in the fuel bill resulting from the installation of a PV system. The consultants will

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2.8 The consultants will then combine the results of simulations with the data collected in the field and extrapolate to arrive at the current market sizes for different PV system applications. Also by using relevant growth projections for various applications, they will project the future market through 1996. The main information that will result from the present and projected market sizes will include (a) number, sizes, and tentative sites for various PV system applications; and (b) the annual economic and retail costs of fuel displaced (current and projected) in the country.

Task 4: Review of Policy Issues

2.9 The successful induction of PV systems into India will need adoption of some policy measures by the GOI. These could include for instance: the waiver of customs duties on components imported for PV systems; initiation of a demonstration program and information campaign to educate the public as to the technical and economic viability of consumer-related PV systems; identification of financing mechanisms to encourage the consumers (and in later years, also the producers of PV systems) and the associated institutional set-up to disburse the loans and collect revenues; identification of training and technical assistance needs related to installation, maintenance and design; and in later years perhaps of local production needs, etc. The consultants will identify appropriate policy measures and make recommendations for their adoption.

Task 5: The Preparation of a National Plan for PV Systems Development

2.10 The consultants will glean information from the above tasks to develop a broadly budgeted and scheduled action plan for inducting Solar PV systems technology in the country in a systematic, timely and efficient manner. The plan will include items such as: the contribution of PV systems in various sectors of the economy; import assembly or manufacturing plan; financing mechanisms; demonstration and other policy measures; etc. The consultants will also develop an indicative rate of return for the proposed national PV systems program in India.

Task 6: Formulation of Pilot Demonstration Project for Solar Photovoltaic System.

2.11 This task will receive the most attention from the consultants. The consultants will prepare a pre-investment project covering selected applications of PV systems. The consultants will ensure that the PV systems are designed for sites where existing climatic data can ensure reliable performance; that the PV systems are cost effective and can make an important contribution to the respective sector of the economy that the right projects are based on reliable technology; and that they have the potential of being replicated -- with necessary modifications at other sites in the country. The consultants will use computer simulations to arrive at optimal system configurations, i.e., the size

and type of PV systems, the support structure, the battery subsystem (if used), and other subsystems as well as the attendant fuel displacement potential. The consultants will prepare detailed designs, schematics and draft tender documents to procure materials and services, leading to successful installation of PV systems. The consultants will also carry out detailed economic evaluations and assess the impact of the PV systems on alternative modes being used. Finally, the consultants will determine the project's expected rate of return.

III. ORGANIZATION OF ASSIGNMENT AND BUDGET

Manpower Requirements

3.1 The study will be supervised and monitored by ESMAP. About three consultants would be hired by ESMAP to undertake the bulk of the work in preparing the study. The study would start with a three week field mission to India which would be led by an ESMAP Staff member and include up to three consultants. Field data would be collected with support form several local agencies and enumerators in India. The consultants' report would be submitted in about 7 weeks after return of the mission, and may require inputs from 2-4 additional consultants. Finally, the Bank Staff would convert the consultant report into the ESMAP study and have it reviewed within the Bank and by the Indian Government (through the Secretary for Renewable Energy in the Misistry of Energy) before it is released in the final formto interested organizations. This final stage is expected to be reached in about 13 weeks after completing the field mission.

Outputs

3.2 The main output of this activity will be a report which will integrate the conclusions and recommendations of the specialist. The report will be supported by two volumes of technical supplements. The technical supplements will inter alia cover (a) a comprehensive evaluation of various aspects of the development and application of solar PV systems in India; (b) climatic data used in the analysis and simulations of PV system performance; and (c) computer printouts on the results of evaluations of solar PV system performance. If necessary additional technical working papers will be prepared and submitted to donors and investors who may later participate in follow-up projects.

Consultant Selection Criteria

3.3 The consultants will reflect among themselves the following expertise at the highest international standards.

(a) Thorough familiarity with the latest computer models used to predict PV systems output and develop PV system design for various applications.

(b) Familiarity with the state-of-the-art production technology of PV systems. Their relevance to developing countries and associated costs; also familiarity with the developments taking place in the PV systems technology in industrialized countries.

(c) Actual hands-on experience (or alternately a keen appreciation of problems involved especially in developing country applications) in installing and maintaining PV systems under actual operating conditions.

(d) Thorough understanding of economic methodologies used in evaluating PV systems and market projections on country-wide basis.

(e) Knowledge of telecommunications; gas pipe line cathodic protection; battery storage; engineering design of photovoltaic arrays (including support structure); variable voltage motor driven pumps; PV powered refrigerators and lighting systems, etc.

(f) Experience in developing countries and ability to accurately gauge program implementation and other related institutional capabilities.

(g) Ability to work with local counterparts; train them quickly, and manage fast, yet accurate field data collection.

(h) Ability to assess the implications of proposed PV systems application with the social environments in the area.

Budget

3.4 The projected budget for the activity is estimated to cost US$ 90,000 as shown below:

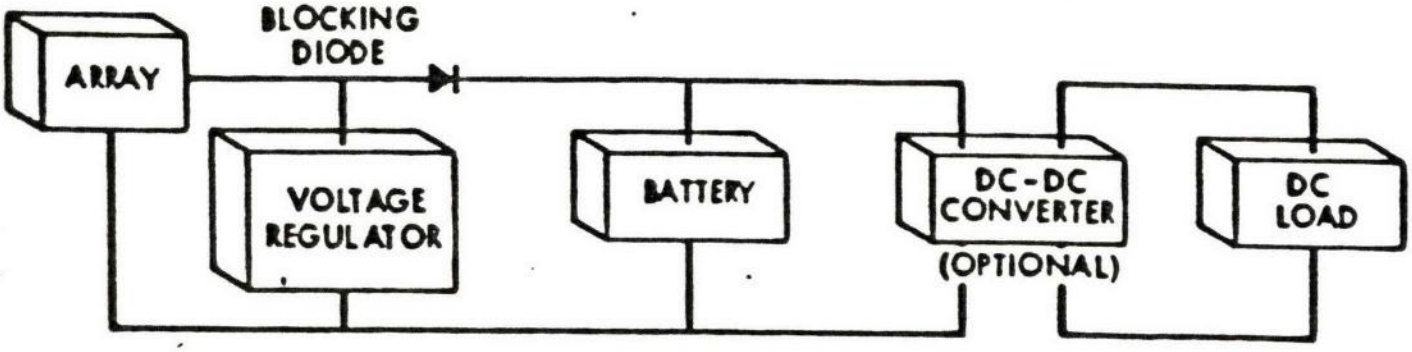
	US$
Consultants' fees (120 days @ $ 350/day)	42,000
Subsistence (Bank staff, consultants 84 days @ $100/day)	8,400
Travel (Bank staff, consultants)	18,000
Local enumerators' fee	8,000
Miscellaneous (secretarial services, telephone, telexes, photocopies, baggage)	4,600
Contingencies	9,000
Total	90,000

PHOTOVOLTAIC POWER SYSTEM SIZING AND COST ANALYSIS

System Description

1. Photovoltaic systems are electrical generating systems based on photovoltaic, or solar cells (built into arrays) which convert incident sunlight directly into DC electricity. The amount of electric current generated by a solar cell array is primarily dependent on the intensity of solar radiation striking its exposed area. The open circuit voltage produced, however, is primarily dependent on temperature of the cells. Voltage and cell temperature are inversely related (i.e., an increase in temperature lowers both the output voltage and the output power, thereby reducing the cell's efficiency).

2. A practical stand-alone photovoltaic power system typically requires several elements in addition to the array in order to satisfy the intended load. A typical configuration for a DC load is shown in Figure (1).



3. Battery storage, most commonly involving a lead acid battery in present applications, stores electrical energy produced by the solar array in daytime for use during the night or under cloudy conditions. To be considered practical for remote applications, a storage battery should have a long life, require low maintenance, and be able to survive a number of deep discharge cycles with subsequent recharge by the array.

4. Another important component of a photovoltaic power system using storage is a voltage regulator that controls the output voltage from the array when used to charge the battery. The regulator also limits the loss of water that could occur from gassing of the battery if it were permitted to become overcharged. At night or on cloudy days, a blocking diode (see Figure 1) prevents the electrical energy stored within the battery from discharging through the voltage regulator or the

array. A system serving a DC load may require a DC-DC converter to match the system output voltage to the rated voltage of the load.

5. Some photovoltaic applications do not necessarily require battery storage. An example of this is water pumping, which needs only a photovoltaic array, a water pump, a water storage tank, and minimum power regulation. In this case, water is pumped into the storage tank during sunlight hours. The storage tank then acts as a reservoir, providing water during non-sunny periods.

System Sizing

Insolation Characteristics and Their Effect on System Sizing

6. Array and battery storage size requirements to adequately serve the load energy requirement ultimately depend on the amount of insolation at the location of the site. Since the amount of energy received from the sun will depend on location, season, weather, and array orientation, it is essential to account for these factors in sizing the systems. Furthermore, since the intended load may also vary seasonally, sizing will normally require a systematic accounting approach to ensure that sufficient solar energy will be captured by the array to achieve acceptable system reliability throughout the year. Insolation characteristics important for sizing photovoltaic system components include the following: diurnal variation, regional and seasonal variability, weather (cloud cover and its frequency) and array orientation relative to the direction of the sun.

Introduction

7. The term "sizing" means estimating the required size or capacity of all major photovoltaic system elements so that the system will be able to satisfactorily serve the intended load. The sizing methodology described in this section is based on a target level of photovoltaic system reliability that is equivalent to conventional diesel or battery alternatives. The size estimates obtained by this methodology are used to cost the system, and the cost estimates, in turn, are compared with estimates for other possible power generating options in order to determine whether selection of a photovoltaic power system is justified on a comparative life-cycle cost basis.

Sizing Methodology

8. The steps in the sizing methodology are summarized below:

(a) Calculate the Load. The average daily energy load in kilowatt-hours is calculated for each month of the year. In the simplest case, a single load element draws constant power at all times. If several load elements are present, the individual

elements must be summed. If the load totals vary from day to day, an average daily load over each month of the year will be required.

(b) Determine the Local Insolation. The appropriate amount of input energy (i.e., insolation, I) to the photovoltaic system at the application site may be obtained from local monthly insolation data for various array tilt angles.

(c) Calculate "Worst-Month" Insolation and Load Values. The sizing approach requires identification of the load and insolation values expected during the "worst month" of the year. This is done by constructing a table of average insolation and load values for each month of the year and then determining the month with the lowest ration of insolation to load. The insolation and load values for the selected month are used in subsequent steps to calculate required array size and battery storage capacity.

(d) Determine Array and Battery Storage Sizing Factors. The approach used in the methodology to size the array and storage is to apply previously determined "sizing factors" 1/ in array and storage calculations in order to scale the system to achieve a desired level of autonomy (i.e., availability). In some sizing application, the user may specify the level of system autonomy by placing a requirement on the number of sunless days during which the system must be able to satisfy the intended load.

(e) Calculate Array Power and Area. Calculating array size means calculating both its required peak power output in watts and its corresponding area in square meters. The array sizing calculations incorporate the worst-month load, array sizing factor based on the worst-month insolation, efficiencies of all major system elements, and a term to account for long-term array degradation.

(f) Calculate Battery Storage Size. Calculating battery storage size requires scaling the storage to supply the daily energy load for a sufficient period of time to assure that the photovoltaic system meets the load requirements at least 96 to 98% of the time (or equivalently, a 0.1 "loss of energy probability" (LOEP) during the worst month of the year). Alternatively, the storage can be sized to supply the load for a specified number of sunless days. In either case, the actual

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1/ Macomber, H. L., Ruzek, J.B., Photovoltaic Stand-Alone Systems, DOES/NASA/0195-1, NASA CR-165352 M206, August, 1981.

rated capacity is adjusted to ensure battery operation within acceptable depth of discharge limits.

(g) Calculate the Voltage Regulator Size. The battery charging voltage regulator is sized to handle the maximum amount of array output power (DC) that is not being used to supply the load. For conservatism, this will be considered to be the full rated peak array output power to account for situations in which the load has been disconnected.

System Cost Analysis

9. Photovoltaic power system life-cycle cost is estimated from the initial cost of the system installed at the site and the present = value of all recurrent costs associated with system operation. Photovoltaic systems are typically capital intensive (i.e., they require a large initial capital expenditure), but have low operating costs (i.e, zero fuel cost and small expenditures for replacement, operation, and maintenance). The sum of capital and recurrent expenditures represents the equivalent amount of money required at the time of system installation to completely cover all costs associated with the photovoltaic system, including a return on the investment, over its operating lifetime (typically assumed to be 30 years). Life-cycle cost of the alternative to a photovoltaic system similarly combines the associated first cost and operating cost for comparison with the photovoltaic option.

10. The recurrent cost in photovoltaic systems are attributed primarily to battery replacement plus battery operation and maintenance.

11. Battery lifetimes are typically between 5 to 10 years depending on manufacturer-specific battery characteristics, number of discharge cycles, design depth of discharge, and operating temperature. In contrast, the anticipated life of a photovoltaic array is estimated to be about 30 years. Battery replacement at regular intervals are, therefore, required throughout the operating lifetime of the photovoltaic array.

12. The present value of the sum of all battery replacements (RPV) over the photovoltaic system lifetime, escalated and discounted to account for the timing of the expenditure, is estimated as follows:

$$\underset{j=1}{\overset{}{}} RPV = [(BATC)(1-SV) + LREP] \times \frac{1 - esc_b}{1 + dv} \; j \times k$$

where

BATC = delivered cost of batteries

SV = fractional salvage value of batteries at time of replacement

LREP = labor cost of battery replacement (in base-year dollars)

j = counter for number of battery replacements (1, nrep)

k = battery lifetime (years)

j x k = constrained to be strictly less than photovoltaic system lifetime or lifetime used in life-cycle cost analysis (years)

13. Regular operation and maintenance costs are estimated on an annual cost basis. These costs include expenditures for activities such as array, battery, and inverter maintenance; component replacements (other than batteries); and grounds, structural and electrical upkeep. Annual operation and maintenance costs (OM) can be estimated on the basis of the number of required visits to the site per year times the cost per trip in base-year dollars. A heuristic frequently used to estimate annual operation and maintenance expenditures is to assume that annual expenses are a fixed percentage of the initial cost of equipment. The present value of the cost of operation and maintenance procedure is the derived annual amount summed over the system lifetime, including any real escalation and discounting of expenditures over time. Annual expenditures are, therefore, growing in dollar amount at the constant rate of real escalation, if any. Present value of operation and maintenance cost (OMPV) is presented as follows:

$$OMPV = OM \times \left(\frac{1 + esc_{om}}{dr - esc_{om}} \right) \times \left(\frac{1 - (1 + esc_{om})^{N}}{1 + dr} \right), \text{ if } dr \neq esc_{om}$$

or

$$OMPV = OM \times N, \text{ if } dr = esc_{om}$$

where

OM = annual operation and maintenance cost in base year dollars

esc_{om} = real (above inflation) annual escalation rate for operation and maintenance activities (fraction), typicaly 0%

Photovoltaic system life-cycle cost (LCC) is then the sum of the initial installed system cost, and the present value of recurrent costs, Equation (1) plus Equation (2) above.

Solar Photovoltaic System Economics

1. The economic viability and technical reliability of solar photovoltaics (PV) systems for small decentralized applications has improved sharply in recent years. Today, PV systems have become cost effective for applications such as rural water pumping, rural telecommunications, medical refrigeration in rural health centers, cathodic protection for pipes, crop drying, lighting and village electrification. PV systems are, however, not cost effective today for larger applications such as grid-interfaced generation of electricity.

2. The sharp reduction in the cost of the PV cells and the associated development of amorphous silicon technology have combined to produce the PV cells at a cost of $3-6 per peak watt. Advances in battery technology have improved the life, and reduced the cost and weight of batteries. Advances in solid state electronics have lowered the cost and improved the reliability of DC-AC inverters. The development of new types of DC motors using permanent magnets and variable voltage and of new materials for DC motor brushes have also increased the reliability and lifetime of motors used in conjunction with solar PV systems. The vast operational experience associated with remote PV system applications in the US., Europe and the developing countries is testimony to the fact that solar PV is a mature and proven technology.

3. The U.S. Agency for International Development and the U.S. Department of Energy are sponsoring a study has reviewed the performance of more than 450 PV systems in 35 developing nations. The application of these PV systems include for water pumping, agricultural processing, communications, lighting, medical refrigeration, and village electrification. For remote PV systems, preliminary findings include the following:

- Pumping applications are likely to be competitive with diesel at hydraulic energy demands of up to 1000 cubic meters-meter head (e.g., 32 cubic meters of water per day at 32 meters head);

- Agricultural processing applications are competitive with diesel when daily energy demand is less than 6 kilowatts-hours a day, and there is a regular supply and demand for the service;

- Communications applications are viable for small, dedicated-use systems up to 2.5 kilowatt-hours a day energy demand and for larger commercial telecommunications applications up to 10 kilowatt-hours a day;

- Medical refrigeration applications face no technical barriers and are cost competitive with Kerosene when vaccination program operation efficiency (such as the loss of vaccines) is taken into account;

- Lighting applications are broadly viable where insolation is at least 5 kilowatt-hours per square meter per day and where Kerosene costs are more than 70¢ per liter;

- Village electrification is a good application for small DC power systems where insolation averages 5 kilowatt-hours per square meter per day, and where the total daily demand is less than 2.5 kilowatt-hours a day.

4. The economic viability and technical reliability of PV pumping systems is much better today than it was in the early 1980s. The benchmarks set by a landmark study commissioned by the UNDP and the World Bank in 1983 1/ have been surpassed in recent years. As an example, PV pumps installed on open wells in Pakistan can pump water from a 7 meter depth for under 4¢/m^3. For rural and livestock water supplies in Africa, PV pumps are cost effective vis-a-vis diesel pumps.

1/ Small scale Solar-Powered Pumping systems: The Technology, its Economics and Advancement, UNDP Project GLO/80/003 Executed by the World Bank, June 1983.

DRAFT

Joint UNDP/World Bank
Energy Sector Management Assistance Program

PAKISTAN

PRE-INVESTMENT STUDY ON SOLAR PHOTOVOLTAIC APPLICATIONS

ACTIVITY INITIATION BRIEF

June 1986

Energy Strategy and Preinvestment Division II
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2.9 The successful induction of PV systems into Pakistan will need adoption of some policy measures by the GOP. These could include for instance: the waiver of customs duties on components imported for PV systems; initiation of a demonstration program and information campaign to educate the public as to the technical and economic viability of consumer-related PV systems; identification of financing mechanisms to encourage the consumers (and in later years, also the producers of PV systems) and the associated institutional set-up to disburse the loans and collect revenues; identification of training and technical assistance needs related to installation, maintenance and design; and in later years perhaps of local production needs, etc. The consultants will identify appropriate policy measures and make recommendations for their adoption.

Task 5: The Preparation of a National Plan for PV Systems Development

2.10 The consultants will glean information from the above tasks to develop a broadly budgeted and scheduled action plan for inducting Solar PV systems technology in the country in a systematic, timely and efficient manner. The plan will include items such as: the contribution of PV systems in various sectors of the economy; import assembly or manufacturing plan; financing mechanisms; demonstration and other policy measures; etc. The consultants will also develop an indicative rate of return for the proposed national PV systems program in Pakistan.

Task 6: Formulation of Pilot Demonstration Project for Solar Photovoltaic System.

2.11 This task will receive the most attention from the consultants. The consultants will prepare a pre-investment project covering selected applications of PV systems. The consultants will ensure that the PV systems are designed for sites where existing climatic data can ensure reliable performance; that the PV systems are cost effective and can make an important contribution to the respective sector of the economy that the right projects are based on reliable technology; and that they have the potential of being replicated -- with necessary modifications at other sites in the country. The consultants will use computer simulations to arrive at optimal system configurations, i.e., the size

and type of PV systems, the support structure, the battery subsystem (if used), and other subsystems as well as the attendant fuel displacement potential. The consultants will prepare detailed designs, schematics and draft tender documents to procure materials and services, leading to successful installation of PV systems. The consultants will also carry out detailed economic evaluations and assess the impact of the PV systems on alternative modes being used. Finally, the consultants will determine the project's expected rate of return.

III. ORGANIZATION OF ASSIGNMENT AND BUDGET

Manpower Requirements

3.1 The study will be supervised and monitored by ESMAP. About three consultants would be hired by ESMAP to undertake the bulk of the work in preparing the study. The study would start with a three week field mission to Pakistan which would be led by an ESMAP Staff member and include up to three consultants. Field data would be collected with support form several local agencies and enumerators in Pakistan. The consultants' report would be submitted in about 7 weeks after return of the mission, and may require inputs from 2-4 additional consultants. Finally, the Bank Staff would convert the consultant report into the ESMAP study and have it reviewed within the Bank and by the Pakistann Government (through the Secretary for Renewable Energy in the Misistry of Energy) before it is released in the final formto interested organizations. This final stage is expected to be reached in about 13 weeks after completing the field mission.

Outputs

3.2 The main output of this activity will be a report which will integrate the conclusions and recommendations of the specialist. The report will be supported by two volumes of technical supplements. The technical supplements will inter alia cover (a) a comprehensive evaluation of various aspects of the development and application of solar PV systems in Pakistan; (b) climatic data used in the analysis and simulations of PV system performance; and (c) computer printouts on the results of evaluations of solar PV system performance. If necessary additional technical working papers will be prepared and submitted to donors and investors who may later participate in follow-up projects.

Consultant Selection Criteria

3.3 The consultants will reflect among themselves the following expertise at the highest international standards.

(a) Thorough familiarity with the latest computer models used to predict PV systems output and develop PV system design for various applications.

(b) Familiarity with the state-of-the-art production technology of PV systems. Their relevance to developing countries and associated costs; also familiarity with the developments taking place in the PV systems technology in industrialized countries.

(c) Actual hands-on experience (or alternately a keen appreciation of problems involved especially in developing country applications) in installing and maintaining PV systems under actual operating conditions.

(d) Thorough understanding of economic methodologies used in evaluating PV systems and market projections on country-wide basis.

(e) Knowledge of telecommunications; gas pipe line cathodic protection; battery storage; engineering design of photovoltaic arrays (including support structure); variable voltage motor driven pumps; PV powered refrigerators and lighting systems, etc.

(f) Experience in developing countries and ability to accurately gauge program implementation and other related institutional capabilities.

(g) Ability to work with local counterparts; train them quickly, and manage fast, yet accurate field data collection.

(h) Ability to assess the implications of proposed PV systems application with the social environments in the area.

Budget

3.4 The projected budget for the activity is estimated to cost US$ 90,000 as shown below:

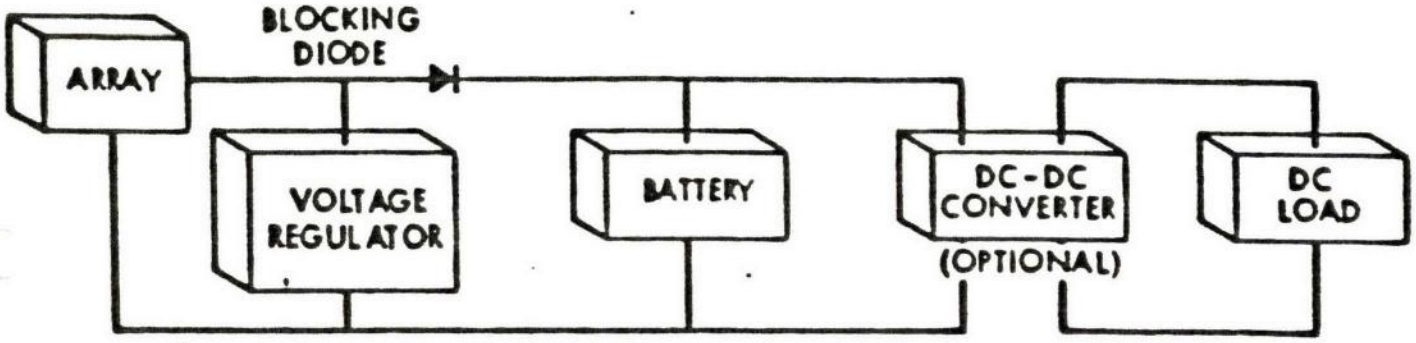
	US$
Consultants' fees (120 days @ $ 350/day)	42,000
Subsistence (Bank staff, consultants 84 days @ $100/day)	8,400
Travel (Bank staff, consultants)	18,000
Local enumerators' fee	8,000
Miscellaneous (secretarial services, telephone, telexes, photocopies, baggage)	4,600
Contingencies	9,000
Total	90,000

PHOTOVOLTAIC POWER SYSTEM SIZING AND COST ANALYSIS

System Description

1. Photovoltaic systems are electrical generating systems based on photovoltaic, or solar cells (built into arrays) which convert incident sunlight directly into DC electricity. The amount of electric current generated by a solar cell array is primarily dependent on the intensity of solar radiation striking its exposed area. The open circuit voltage produced, however, is primarily dependent on temperature of the cells. Voltage and cell temperature are inversely related (i.e., an increase in temperature lowers both the output voltage and the output power, thereby reducing the cell's efficiency).

2. A practical stand-alone photovoltaic power system typically requires several elements in addition to the array in order to satisfy the intended load. A typical configuration for a DC load is shown in Figure (1).



3. Battery storage, most commonly involving a lead acid battery in present applications, stores electrical energy produced by the solar array in daytime for use during the night or under cloudy conditions. To be considered practical for remote applications, a storage battery should have a long life, require low maintenance, and be able to survive a number of deep discharge cycles with subsequent recharge by the array.

4. Another important component of a photovoltaic power system using storage is a voltage regulator that controls the output voltage from the array when used to charge the battery. The regulator also limits the loss of water that could occur from gassing of the battery if it were permitted to become overcharged. At night or on cloudy days, a blocking diode (see Figure 1) prevents the electrical energy stored within the battery from discharging through the voltage regulator or the

array. A system serving a DC load may require a DC-DC converter to match the system output voltage to the rated voltage of the load.

5. Some photovoltaic applications do not necessarily require battery storage. An example of this is water pumping, which needs only a photovoltaic array, a water pump, a water storage tank, and minimum power regulation. In this case, water is pumped into the storage tank during sunlight hours. The storage tank then acts as a reservoir, providing water during non-sunny periods.

System Sizing

Insolation Characteristics and Their Effect on System Sizing

6. Array and battery storage size requirements to adequately serve the load energy requirement ultimately depend on the amount of insolation at the location of the site. Since the amount of energy received from the sun will depend on location, season, weather, and array orientation, it is essential to account for these factors in sizing the systems. Furthermore, since the intended load may also vary seasonally, sizing will normally require a systematic accounting approach to ensure that sufficient solar energy will be captured by the array to achieve acceptable system reliability throughout the year. Insolation characteristics important for sizing photovoltaic system components include the following: diurnal variation, regional and seasonal variability, weather (cloud cover and its frequency) and array orientation relative to the direction of the sun.

Introduction

7. The term "sizing" means estimating the required size or capacity of all major photovoltaic system elements so that the system will be able to satisfactorily serve the intended load. The sizing methodology described in this section is based on a target level of photovoltaic system reliability that is equivalent to conventional diesel or battery alternatives. The size estimates obtained by this methodology are used to cost the system, and the cost estimates, in turn, are compared with estimates for other possible power generating options in order to determine whether selection of a photovoltaic power system is justified on a comparative life-cycle cost basis.

Sizing Methodology

8. The steps in the sizing methodology are summarized below:

(a) Calculate the Load. The average daily energy load in kilowatt-hours is calculated for each month of the year. In the simplest case, a single load element draws constant power at all times. If several load elements are present, the individual

elements must be summed. If the load totals vary from day to day, an average daily load over each month of the year will be required.

(b) Determine the Local Insolation. The appropriate amount of input energy (i.e., insolation, I) to the photovoltaic system at the application site may be obtained from local monthly insolation data for various array tilt angles.

(c) Calculate "Worst-Month" Insolation and Load Values. The sizing approach requires identification of the load and insolation values expected during the "worst month" of the year. This is done by constructing a table of average insolation and load values for each month of the year and then determining the month with the lowest ration of insolation to load. The insolation and load values for the selected month are used in subsequent steps to calculate required array size and battery storage capacity.

(d) Determine Array and Battery Storage Sizing Factors. The approach used in the methodology to size the array and storage is to apply previously determined "sizing factors" 1/ in array and storage calculations in order to scale the system to achieve a desired level of autonomy (i.e., availability). In some sizing application, the user may specify the level of system autonomy by placing a requirement on the number of sunless days during which the system must be able to satisfy the intended load.

(e) Calculate Array Power and Area. Calculating array size means calculating both its required peak power output in watts and its corresponding area in square meters. The array sizing calculations incorporate the worst-month load, array sizing factor based on the worst-month insolation, efficiencies of all major system elements, and a term to account for long-term array degradation.

(f) Calculate Battery Storage Size. Calculating battery storage size requires scaling the storage to supply the daily energy load for a sufficient period of time to assure that the photovoltaic system meets the load requirements at least 96 to 98% of the time (or equivalently, a 0.1 "loss of energy probability" (LOEP) during the worst month of the year). Alternatively, the storage can be sized to supply the load for a specified number of sunless days. In either case, the actual

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1/ Macomber, H. L., Ruzek, J.B., Photovoltaic Stand-Alone Systems, DOES/NASA/0195-1, NASA CR-165352 M206, August, 1981.

rated capacity is adjusted to ensure battery operation within acceptable depth of discharge limits.

(g) Calculate the Voltage Regulator Size. The battery charging voltage regulator is sized to handle the maximum amount of array output power (DC) that is not being used to supply the load. For conservatism, this will be considered to be the full rated peak array output power to account for situations in which the load has been disconnected.

System Cost Analysis

9. Photovoltaic power system life-cycle cost is estimated from the initial cost of the system installed at the site and the present = value of all recurrent costs associated with system operation. Photovoltaic systems are typically capital intensive (i.e., they require a large initial capital expenditure), but have low operating costs (i.e, zero fuel cost and small expenditures for replacement, operation, and maintenance). The sum of capital and recurrent expenditures represents the equivalent amount of money required at the time of system installation to completely cover all costs associated with the photovoltaic system, including a return on the investment, over its operating lifetime (typically assumed to be 30 years). Life-cycle cost of the alternative to a photovoltaic system similarly combines the associated first cost and operating cost for comparison with the photovoltaic option.

10. The recurrent cost in photovoltaic systems are attributed primarily to battery replacement plus battery operation and maintenance.

11. Battery lifetimes are typically between 5 to 10 years depending on manufacturer-specific battery characteristics, number of discharge cycles, design depth of discharge, and operating temperature. In contrast, the anticipated life of a photovoltaic array is estimated to be about 30 years. Battery replacement at regular intervals are, therefore, required throughout the operating lifetime of the photovoltaic array.

12. The present value of the sum of all battery replacements (RPV) over the photovoltaic system lifetime, escalated and discounted to account for the timing of the expenditure, is estimated as follows:

$$RPV = [(BATC)(1-SV) + LREP] \times \frac{1 - esc}{1 + dv}^{b} \; j \times k$$

$j + 1$

where

BATC = delivered cost of batteries

SV = fractional salvage value of batteries at time of replacement

LREP = labor cost of battery replacement (in base-year dollars)

j = counter for number of battery replacements (1, nrep)

k = battery lifetime (years)

j x k = constrained to be strictly less than photovoltaic system lifetime or lifetime used in life-cycle cost analysis (years)

13. Regular operation and maintenance costs are estimated on an annual cost basis. These costs include expenditures for activities such as array, battery, and inverter maintenance; component replacements (other than batteries); and grounds, structural and electrical upkeep. Annual operation and maintenance costs (OM) can be estimated on the basis of the number of required visits to the site per year times the cost per trip in base-year dollars. A heuristic frequently used to estimate annual operation and maintenance expenditures is to assume that annual expenses are a fixed percentage of the initial cost of equipment. The present value of the cost of operation and maintenance procedure is the derived annual amount summed over the system lifetime, including any real escalation and discounting of expenditures over time. Annual expenditures are, therefore, growing in dollar amount at the constant rate of real escalation, if any. Present value of operation and maintenance cost (OMPV) is presented as follows:

$$OMPV = OM \times \left(\frac{1 + esc_{om}}{dr - esc_{om}} \right) \times \left(\frac{1 - (1 + esc_{om})^{N}}{1 + dr} \right), \text{ if } dr \neq esc_{om}$$

or

$$OMPV = OM \times N, \text{ if } dr = esc_{om}$$

where

OM = annual operation and maintenance cost in base year dollars

esc_{om} = real (above inflation) annual escalation rate for operation and maintenance activities (fraction), typicaly 0%

Photovoltaic system life-cycle cost (LCC) is then the sum of the initial installed system cost, and the present value of recurrent costs, Equation (1) plus Equation (2) above.

Solar Photovoltaic System Economics

1. The economic viability and technical reliability of solar photovoltaics (PV) systems for small decentralized applications has improved sharply in recent years. Today, PV systems have become cost effective for applications such as rural water pumping, rural telecommunications, medical refrigeration in rural health centers, cathodic protection for pipes, crop drying, lighting and village electrification. PV systems are, however, not cost effective today for larger applications such as grid-interfaced generation of electricity.

2. The sharp reduction in the cost of the PV cells and the associated development of amorphous silicon technology have combined to produce the PV cells at a cost of $3-6 per peak watt. Advances in battery technology have improved the life, and reduced the cost and weight of batteries. Advances in solid state electronics have lowered the cost and improved the reliability of DC-AC inverters. The development of new types of DC motors using permanent magnets and variable voltage and of new materials for DC motor brushes have also increased the reliability and lifetime of motors used in conjunction with solar PV systems. The vast operational experience associated with remote PV system applications in the US., Europe and the developing countries is testimony to the fact that solar PV is a mature and proven technology.

3. The U.S. Agency for International Development and the U.S. Department of Energy are sponsoring a study has reviewed the performance of more than 450 PV systems in 35 developing nations. The application of these PV systems include for water pumping, agricultural processing, communications, lighting, medical refrigeration, and village electrification. For remote PV systems, preliminary findings include the following:

- Pumping applications are likely to be competitive with diesel at hydraulic energy demands of up to 1000 cubic meters-meter head (e.g., 32 cubic meters of water per day at 32 meters head);

- Agricultural processing applications are competitive with diesel when daily energy demand is less than 6 kilowatts-hours a day, and there is a regular supply and demand for the service;

- Communications applications are viable for small, dedicated-use systems up to 2.5 kilowatt-hours a day energy demand and for larger commercial telecommunications applications up to 10 kilowatt-hours a day;

- Medical refrigeration applications face no technical barriers and are cost competitive with Kerosene when vaccination program operation efficiency (such as the loss of vaccines) is taken into account;

- Lighting applications are broadly viable where insolation is at least 5 kilowatt-hours per square meter per day and where Kerosene costs are more than 70¢ per liter;

- Village electrification is a good application for small DC power systems where insolation averages 5 kilowatt-hours per square meter per day, and where the total daily demand is less than 2.5 kilowatt-hours a day.

4. The economic viability and technical reliability of PV pumping systems is much better today than it was in the early 1980s. The benchmarks set by a landmark study commissioned by the UNDP and the World Bank in 1983 1/ have been surpassed in recent years. As an example, PV pumps installed on open wells in Pakistan can pump water from a 7 meter depth for under 4¢/m^3. For rural and livestock water supplies in Africa, PV pumps are cost effective vis-a-vis diesel pumps.

1/ Small scale Solar-Powered Pumping systems: The Technology, its Economics and Advancement, UNDP Project GLO/80/003 Executed by the World Bank, June 1983.

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INTBAFRAD BANGKOK THAILAND JUNE 26, 1986

FOR AHMED COPY IKRAM AND DAFFERN
AAA RE THAILAND FUEL PRICES. AM FAXING TODAY NEWSPAPER SUMMARY OF THIRD AND ALLEGEDLY FINAL ROUND OF PETROLEUM PRODUCT PRICE CUTS EFFECTIVE JULY 1. PLEASE OBTAIN FROM AEAKO. NOTE THAT DIESEL/GASOLINE GAP REDUCED FURTHER AND FUEL OIL PRICE CUT VERY SUBSTANTIALLY. EXPECTATIONS ARE THAT GAS PRICE WILL HAVE TO FOLLOW BEFORE LONG TO REMAIN COMPETITIVE. AM ALSO POUCHING TRANSLATION OF RELEVANT SECTIONS OF DRAFT ENERGY PLAN PLUS CABINET COMMENTS.
BBB PRAPHAT OF NEA ADVISES THAT HE WILL BE SENDING DETAILED PROPOSAL FOR ESMAP LIGNITE UTILIZATION WORK TO HUME WITHIN ONE OR TWO WEEKS. MAIN COMPONENTS LIKELY TO BE (1) REVIEW OF EXISTING RESOURCE DATA, (2) ANALYSIS OF UTILIZATION PRIORITIES. (3) ADVICE ON CONTRACTUAL ARRANGEMENTS FOR PRIVATE SECTOR EXPLORATION AND DEVELOPMENT. PRAPHAT IS LOOKING FOR ESMAP COMMITMENT IN PRINCIPLE BY AUGUST TO BRIEF NEW GOVERNMENT. REGARDS
JECHOUTEK

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ALT RTD FROM:EAS

NNNN

F-338

INT/83/005

June 26, 1986

Mr. Ian Hume

Staffing of Thailand Fuelwood Missions

Ian -

Further to your query, I have checked up on the staffing of the two ESMAP fuelwood missions to Thailand which is as follows:

Fuelwood Supply Project Preparation Mission

ESMAP Staff	2	Grut, Taylor
International Consultants	2	Hussain (Forester); Hines (First Economist)
Total	4	

Improved Stoves/Kilns Program Preparation Mission

ESMAP Staff	2	Terrado, van der Plas
International Consultants	3	Booth (Charcoal Specialist); Burns (Stove Marketing Specialist); Shanahan (Stove Production Specialist)
Total	5	

This excludes two local consultants working with each mission on subtasks that did not require expatriate input. These numbers are in line with those for a "typical" ESMAP mission which would comprise 1 higher level, 1 researcher, and 3 or so consultants.

Bernard Montfort

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT|83|005

DATE: June 25, 1986

TO: Mr. A. Roa, Acting Division Chief, EMPPE

FROM: Bernard Montfort, Division Chief, EGYS1

SUBJECT: MOROCCO: Household Energy Strategy

1. I refer to your memo of June 18, 1986 to Mr. Shilling on the above subject. Even though we have kept EMPPE staff fully informed about the nature, scope, rationale, and required resources for the above project, it does seem that clarification is needed again regarding these questions.

2. First of all, the project is not just "a questionnaire survey". It is a study to formulate a comprehensive strategy for household energy, by examining several policy options. As you know, households consume more than half the total energy resources in Morocco (commercial and traditional). Yet not much is reliably known about: the contribution of fuelwood to the energy balance in general and to household energy in particular, and the associated deforestation in some regions; possibilities of interfuel substitution and energy conservation in households; the impact of energy pricing policies on households; supplying petroleum products for household use; and the socio-economic impact of rural electrification.

3. Evidently, the absence of reliable information on such issues has not stopped the government from making important decisions that affect the household sector. Neither has it stopped us in the Bank from preparing for policy-based lending in the energy sector. To improve these processes, however, we sought to provide the necessary analysis, and both the government and Bank are actually on record for assigning priority to this study.

4. The fact that we are not directly involved in operational work should not deny us a legitimate claim on Bank resources. This is all the more so in view of the facts that: (a) we are providing a service to complement operational work; (b) that specific service is not available elsewhere in the Bank; and (c) USAID's decision to finance up to $400,000 of consultants' inputs was conditional upon a substantial Bank input.

5. Estimated Bank staff inputs of 80 SW is for the entire life of the project, not for one year, and expected to span three fiscal years: FY87, FY88, and FY89. It therefore cannot be compared to regionally managed SRA tasks for FY87 alone. Indeed, we have requested 40 SW for FY87, but got only 20 SW. The latter figure is about eight percent of the SRA tasks in Power and Energy for all EMENA countries in FY87 (and not one half, mentioned in your memo). It is this input that will assure both the high quality and direct relevance of the project outputs. EGY view is that the Bank contribution of 80 SW is indeed a reasonable cost

to: (a) develop empirically-based position papers on the central policy issues facing the Moroccan government in the energy sector; and (b) identify and prepare preinvestment studies in three subsectors: forestry (fuelwood development, as part of Forestry II), rural electrification, and petroleum products infrastructure.

cc: Messrs. Churchill, Hume, McCarthy, Saunders, Fish, Decaux, Ahmed, Sherbiny, Leitmann (EGY); Pranich, Reekie, McKechnie, Hamilton, Liebenthal, O'Sullivan, Van der Poll (EMP); Shilling, Brigish, J. Porter, Harry-Prasad (EM2);

Ms. Pierce (EM2)

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(3/82)

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PAGE 1 OF 2

OFFICIAL DEPT/DIV ABBREVIATION: EGYS1

MESSAGE NUMBER:

TEST NUMBER (FOR CASHIER'S USE ONLY):

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INTBAFRAD, BANGKOK, THAILAND. ATTENTION VISITING STAFFMEMBER MIKAEL GRUT (EGY). RE: POSSIBILE AUSTRALIAN COFINANCING OF ESMAP FUELWOOD/CHARCOAL STUDY. DURING DISCUSSIONS YESTERDAY WITH MR. JEREMY WILSON, FROM ADAB'S COFINANCING UNIT, HE EXPRESSED STRONG INTEREST IN CONTRIBUTING TOWARDS COST OF THE ESMAP PREPARATORY WORK NOW UNDERWAY FOR FUELWOOD SUPPLY AND CONSERVATION IN THAILAND. ONLY OBSTACLE MIGHT BE THAT THE WORK HAS ALREADY STARTED AND THERE IS ONLY LIMITED AUSTRALIAN PARTICIPATION IN THE MISSION. HOWEVER I TOLD HIM THAT THIS WAS A TWO PHASE EXERCISE WITH A SECOND MISSION PLANNED FOR NOVEMBER AND THAT ALTHOUGH WE WOULD LIKE TO MAINTAIN THE SAME TEAM FOR BOTH PHASES, TO THE EXTENT THAT AN ADDITIONAL PERSON WAS REQUIRED FOR THE SECOND MISSION, WE WOULD TRY TO IDENTIFY A SUITABLE AUSTRALIAN CANDIDATE. I ALSO TOLD HIM THAT WE WERE ALREADY USING HARRY BOOTH ON THE CHARCOAL SIDE. ANYWAY IT LOOKS LIKE THEY MIGHT PICK UP AT LEAST PART OF THE COST. TO THIS END HE SUGGESTED THAT YOU MIGHT MEET WITH MARGARET REGNAULT, FIRST SECRETARY (DEVELOPMENT) IN THE AUSTRALIAN EMBASSY IN BANGKOK AND BRIEF HER ON THE SCOPE, OBJECTIVES ETC., OF YOUR MISSION. REFER TO MR. WILSON'S VISIT HERE AND

END OF TEXT

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CLASS OF SERVICE: Telex | TELEX NO.: 82817 | DATE: 6/25/86

SUBJECT:

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PAGE 2 OF 2

OFFICIAL DEPT/DIV ABBREVIATION: EGYS1

MESSAGE NUMBER

TEST NUMBER (FOR CASHIER'S USE ONLY)

START HERE

HIS RECOMMENDATION FOR YOU TO SEE HER. ADVISE ME OF OUTCOME OF YOUR VISIT SO I CAN PASS ALONG TO HIM. TRUST MISSION GOING WELL. REGARDS, MASOOD AHMED, DEPUTY DIVISION CHIEF, ENERGY STRATEGY AND PREINVESTMENT DIVISION I, INTBAFRAD.

END OF TEXT

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CLASS OF SERVICE: Telex

TELEX NO.: 82817

DATE: 6/25/86

SUBJECT: ESMAP: Thailand Fuelwood Study

DRAFTED BY: MAhmed:hm

EXTENSION: 73996

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AUTHORIZED BY (Name and Signature): Masood Ahmed, Deputy Chief, EGYS1

DEPARTMENT: Energy

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THE WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

NRIC
INT/83/005

DATE: June 24, 1986

TO: Mr. J. Larrieu, LCPEN

FROM: Christopher R. Poncia, EGYS2

EXTENSION: 7-5284

SUBJECT: ESMAP: JAMAICA - Proposed Cogeneration Study

Background

1. As you know, we expect shortly to return to Jamaica to finalize the Petroleum Procurement, Refining and Distribution Study and to define the Jamaica ESMAP program.

2. In our discussions with MMET and JPS staff last February on the ESMAP program (after the conclusion of the Petroleum Study discussions), we agreed, as recommended in the Energy Assessment, that "a proposed program of assistance" under ESMAP could include "a cogeneration study to examine the terms, conditions and tariff structure on which available surplus from agricultural and industrial operations might be supplied to JPS".

3. On April 4, 1986, we received specific proposals from MMET for the cogeneration study, together with the recommendation that R. W. Beck and Associates be selected as consultants. Although not mentioned by JPS in February, we understand that the cogeneration study was initially proposed by JPS for financing under the IBRD Jamaica Power III Loan, that study TOR were prepared on that basis in 6/85, proposals submitted by Beck (and presumably others) in 10/85 and the JPS evaluation and proposed award to Beck carried out sometime thereafter.

Financing of the Study

4. JPS would clearly prefer that the study were financed under the ESMAP program, as grant funds, rather than under the Bank's Jamaica Power III Loan. As we discussed with you, we believe that ESMAP funds should not be used to replace Bank project financing in this way, particularly in view of the overall concern of donor agencies that their funds should not be used to prepare Bank projects. We should, however, like to consider the scope and phasing of the cogeneration study with you to see whether any supplemental ESMAP work might be justified.

Comments on the Beck Proposals

5. Potential Power Suppliers: A study of terms, conditions and tariffs for power supply to JPS assumes the availability of that power to JPS at a given price (eg JPS marginal or avoided cost). A logical

starting point for the cogeneration study would, therefore, be an assessment of the potential supply over a given price range. Potential suppliers might range from large scale supply from the alumina smelter industry (particularly, the proposed Clarendon Smelter Power Station providing 100 MW of surplus power capacity to JPS, based on coal) to small scale supply from the sugar industry, based on bagasse.

6. However, both cogeneration study TOR and the Beck proposals limit themselves to a study of supply from "small scale producers", which is not defined but presumably excludes industry supply. Given that the Clarendon proposal raise a number of concerns for the Bank as to its compatibility with JPS' least cost generation program, we wonder if the best way to resolve these concerns might not be to widen the cogeneration study to all potential suppliers, but stressing that supply from all such suppliers must be within the context of the least cost generation program (including any competing small scale hydro potential, currently under study by CIDA).

7. If potential suppliers are limited to small scale producers, the case for detailed review of their potential remains. We understand that AID has already financed a number of studies on small scale producers [1/]. However, the principal recommendation of these studies - that a pilot program for power production be introduced at the Monymusk sugar estate - may require further review. We have discussed this proposal with Mr. Heidebroek (LCPAB), who is preparing the proposed Bank Sugar Rehabilitation Project in Jamaica, providing for the rehabilitation of the Monymusk and Frome sugar estates. According to Mr. Heidebroek, Monymusk would not be a good selection for surplus power supply, since it is located in an area with little rainfall requiring substantial electricity for irrigation. He suggest, instead, that Frome estate might be suitable, since it is located in the West where natural rainfall is adequate. In both cases, he cautions against excess downgrading of the sugarcane into energy cane, since this will reduce sugar revenues and make recovery of financial viability by the estates more difficult.

8. We would, therefore, suggest that the market survey should be done first and that the follow up "PURPA" (US Public Utilities Regulatory Policies Act) study be undertaken only if the results of the market so justify.

Potential ESMAP Assistance

We propose meeting with Mr. Heidebroek and yourself to consider the scope and phasing of the proposed cogeneration study. If you agree

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1/ Cane production for sugar and electric power in Jamaica - 10/84
Impediments to off system electrical generation in Jamaica - 10/25/1984
Non utility generation of electricity in Jamaica - 12/84

that the main study should not begin until justified by the potential supplier survey, we should consider whether that survey should be done by Beck or by an independent consultant without any interest in the follow up study.[2/] In the latter case, ESMAP may be able to assist, in conjunction with the consultants designing the Frome generator rehabilitation. In our meeting, we could also agree on our approach to MMET and JPS.

cc: Messrs./Mmes. Heidebroek (LCPAB), Bernard (LC2VC), Hume (EGYPS), Byer, Fish (EGYPA), Bates, Schmedtje, Gulstone (EGYS2)

CRPoncia:cah

2/ According to Beck's letter of 5/12/86 to JPS, their study cost cutting apparently takes the form of bringing USAID in to finance the "Estimation of Supplier Response" component, plus one other component. We may therefore need to consider this with AID, whose energy program in Jamaica is scheduled to terminate in September.

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

NRIC

INT|03|005

DATE: June 24, 1986

TO: Ms. Connie Bernard, LC2VC

FROM: Christopher R. Poncia, EGYS2

EXTENSION: 7-5284

SUBJECT: JAMAICA - Energy Assessment Supplemental Report and ESMAP Program

I spoke today to Miss Clarke in the Minister's office regarding the draft Supplemental Report sent down on June 2, 1986 for Government comment. Ms. Clarke told me that the draft was currently under review. Minister Hart was away until the end of this month, but she would get back to me as soon as the review was complete, and the decision made as to whether a further Bank mission to Jamaica was to be requested. At that point, the timing of the ESMAP mission would also be decided.

cc: Messrs. Hume (EGYPS), Nayar, Trabucco (EGYD2), Schmedtje, Bates (EGYS2)

CRPoncia:cah

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

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INT/83/005

June 23, 1986

Mr. Timothy S. Rothermel, Director
Division for Global and Interregional Projects
United Nations Development Programme
One United Nations Plaza
New York, N.Y. 10017

Subject: Your Letter of May 30, 1986

Dear Mr. Rothermel:

With reference to the above mentioned letter, may I begin by apologizing for the oversight in not sending you a copy of my letter of thanks to Mr. Harkema, following the Netherlands offer of financing for the Niger Improved Urban Cookstoves Programme. Please find enclosed a copy of my reply of February 24 for your files.

Due to the existence of a project profile on the Niger project (5/8/84) which was copied to your office at the time, we feel that there is no need to prepare a second document. I enclose another copy of the profile for your files. In addition, the Netherlands Government has based its contribution on the aforementioned project profile and would undoubtedly be confused by receiving a second version.

With regard to the draft project document for the Sudan Forestry/Fuelwood project, I am informed that a copy was sent to Mr. Cox in May 1986. On the Six Country Solar Water Heating/Wind studies, Mr. Malik's extended absence due to illness has delayed preparation of the necessary documents but he has been reminded to forward them to you as soon as they are completed.

Yours sincerely,

Ian Hume
Assistant Director
Energy Department

Attachments

Record Removal Notice

The World Bank Group Archives & Records Management

File Title	Barcode No.
UNDP - INT/83/005 - Energy Sector Management Assistance Programme [ESMAP] - Correspondence - 1984/1986 - Volume 6	30189796

Document Date	Document Type	
June 20, 1986	Telex	

Correspondents / Participants
To: Mr. Alfred Mubanda, UNDP
From: J. Boroumand and Bernard Montford, Division Chief, EGYS1

Subject / Title
ESMAP/Ghana Utilization Study: Hiring of local consultants

Exception(s)
Personal Information

Additional Comments

The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information or other disclosure policies of the World Bank Group.

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Kim Brenner-Delp	November 02, 2022

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INT/86/005

June 20, 1986

Mr. Mustapha Zaanouni
Assistant Administrator and Regional Director for Arab States
Regional Bureau of Arab States
United Nations Development Programme
1 UN Plaza, DC-1-2228
New York, N.Y. 10017

Subject: Joint UNDP/World Bank Energy Assessment and Energy Sector Management Assistance Programmes: Transmission of Completed Reports on Countries Under the Responsibility of the Regional Bureau for Arab States

Dear Mr. Zaanouni:

Following discussions held earlier this year between your bureau, our colleagues at DGIP and Messrs. Montfort and de Capitani of my staff, it is my pleasure to forward to you copies of all Assessment and ESMAP reports completed to date in countries covered by the Regional Bureau for Arab States.

Additional ESMAP activities are currently underway in a number of these countries and we will ensure that they are sent to you on completion.

If you have any questions relating to the Joint Programmes' activities, please do not hesitate to contact us.

Yours sincerely,

Ian M. Hume
Assistant Director
Energy Department

The World Bank
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INT/83/001

June 20, 1986

Mr. Orlando Olcese
Executive Secretary
United Nations Capital Development Fund
1 UN Plaza, FF-1020
New York, N.Y. 10017

Subject: Joint UNDP/World Bank Energy Assessment and Energy Sector Management Assistance Programmes: Transmission of Completed Reports on Countries Under the Responsibility of the United Nations Capital Development Fund

Dear Mr. Olcese:

Following discussions held earlier this year between your bureau, our colleagues at DGIP and Messrs. Montfort and de Capitani of my staff, it is my pleasure to forward to you copies of all Assessment and ESMAP reports completed to date in countries covered by the United Nations Capital Development Fund.

Additional ESMAP activities are currently underway in a number of these countries and we will ensure that they are sent to you on completion.

If you have any questions relating to the Joint Programmes' activities, please do not hesitate to contact us.

Yours sincerely,

Ian M. Hume
Assistant Director
Energy Department

INT/83/009
INT/80/009

The World Bank
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June 20, 1986

Mr. Bertin Borna, Director
United Nations Sudano-Sahelian Office
1 UN Plaza, FF-1194
New York, N.Y. 10017

Subject: Joint UNDP/World Bank Energy Assessment and Energy Sector Management Assistance Programmes: Transmission of Completed Reports on Countries Under the Responsibility of the United Nations Sudano-Sahelian Office

Dear Mr. Borna:

Following discussions held earlier this year between your bureau, our colleagues at DGIP and Messrs. Montfort and de Capitani of my staff, it is my pleasure to forward to you copies of all Assessment and ESMAP reports completed to date in countries covered by the United Nations Sudano-Sahelian Office.

Additional ESMAP activities are currently underway in a number of these countries and we will ensure that they are sent to you on completion.

If you have any questions relating to the Joint Programmes' activities, please do not hesitate to contact us.

Yours sincerely,

Ian M. Hume
Assistant Director
Energy Department

INT/E3/005

The World Bank
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June 20, 1986

Mr. Arjan Hamburger
Energy Coordinator
Ministerie van Buitenlandse Zaken
Bezuidenhoutseweg 67
Postbus 20061
2500 EB 's-Gravenhage
The Netherlands

ESMAP: Indonesia - Household Energy Strategy (Marwick Letter)
[Your ref: DST/PLc - 142273 (I 10)]

Dear Mr. Hamburger:

I am writing to provide you with a response to the key points raised in Mr. Stuart Marwick's note of May 4, 1986, which comments on the draft Activity Initiation Brief for the above project. The note brings up both procedural (paras. 3-7, 14) and substantive (paras. 8-13) matters; I will begin by providing thoughts on the former.

Two central criticisms have been levelled at the proposed process for undertaking a household energy strategy: (a) that the project is not specifically geared towards strengthening institutions involved in household energy work, particularly non-governmental organizations (NGOs), and (b) that the Woodburning Stove Group (WSG) has not been involved in the drafting of the AIB. Concerning (a), the AIB explicitly states that "a secondary objective is to transfer skills and techniques to Indonesian staff to facilitate performing similar exercises entirely by Indonesian institutions in the future." While this does not preclude the use of NGOs, we hesitate to significantly rely on them for household energy work in Indonesia because they:

(i) have generally not been involved in the field for any length of time;

(ii) do not have much to show in the way of project outputs, e.g. no large-scale dissemination of improved cookstoves;

(iii) have very limited geographical experience and impact throughout Java;

(iv) possess inadequate financial and technical capabilities to undertake project components.

Thus, if the project were to heavily involve NGOs, a large investment of time and financial subsidization would be required, with no guarantee of positive results. It is important to add that the Indonesian government shares these sentiments. Regarding (b), it is not our policy to directly involve outside organizations in the drafting of internal documents. However, we certainly welcome and even solicit indirect comments, such as Mr. Marwick's, during the formulation of our proposals.

Still, in principle, we have no problem with using NGOs where their skills and experience are appropriate. In fact, Mr. Floor made every effort to discuss the project with key NGOs during his recent visit. At this point, we feel that it would be premature to identify specific organizations that would undertake project components. The door is definitely open to NGOs and the WSG.

The note also raises a minor technical point involving the process of data collection and demonstration project work. Contrary to Mr. Marwick's skepticism, we feel that 18 months is a reasonable period for survey work of this scale. In fact, we have recently completed a moderate-sized household survey in Ethiopia in less time and initiated a similar undertaking in Morocco which will involve a national sample of at least 4000 households during a comparable time period. Further, not all of the proposed project work relies on a fully tabulated and analyzed set of data. For example, LPG distribution improvements can be assessed independently of the surveys, and improved household energy equipment can be developed after the results of the first round of surveys are known.

The note goes on to make several substantive comments, some of which are worth incorporating in a final AIB. The suggestion that inter-fuel substitution analysis should incorporate econometric modelling to gauge the interactive effects of price changes is certainly valid, and has been specifically mentioned in household energy AIBs for other countries. The point concerning inclusion of household-based food preparing industries in the survey is reasonable. In fact, this was discussed with the Indonesian government, Mr. Marwick and NGOs, and we will gather data on this aspect of residential energy consumption. However, if institutional and community cooking is to be added, the scope of the activity will be expanded, thus requiring additional resources for the increased sampling, surveying and pilot work that will be entailed. We would like to request your advice and guidance on this issue.

The remaining substantive comments are either incorrect or not applicable. Mr. Marwick fallaciously asserts that "woodfuel is still a major energy source for urban dwellers." In fact, the Ministry of Mines and Energy September 1985 survey of urban household energy consumption concludes that wood and charcoal account for only 4 and 3%, respectively, of direct household fuel consumption. Next, we do not feel that it is necessary to mention a particular health-oriented stove program (see paras. 10-11) though we are cognizant of the health issue in household energy. As is usual with ESMAP cookstove-related activities, questions

concerning smoke and ventilation will be part of the survey, laboratory testing will include measurements of CO/CO2 output, and cookstove design will incorporate health improvements as a goal. Finally, it is inaccurate to state that there will be no rural cookstove improvements (para. 13). The rural household energy consumption survey will determine the need for and scope of an improved biomass stove production and dissemination project and, indeed, this is listed as a key activity in the AIB.

I hope that these responses will clarify our presentation of the proposed activity in Indonesia. We look forward to initiating the project in the near future with your cooperation and support.

Sincerely,

Bernard Montfort
Division Chief
Energy Strategy and Preinvestment
Division I
Energy Department

INT/83/005
6/19/86

Back to office report

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

BTO
6/19

DATE: June 19, 1986

TO: Mr. Bernard Montfort, Chief, EGYS1

FROM: Amarquaye Armar, EGYS2

EXTENSION: 74546

SUBJECT: ESMAP: THE GAMBIA - Energy Sector Review Mission
Back-to-Office Report

Introduction

1. This report presents the findings of my mission to the Gambia from April 28 to May 6, 1986. The purpose was to review recent developments in the energy sector and to obtain information on a number of petroleum supply and pricing issues. The report attempts to provide further insight into the petroleum supply and pricing issues raised by WA2DB in the context of the proposed SAL. Additional details regarding developments in other energy sub-sectors, including the status of ongoing and planned energy technical assistance will be presented in an updated version of the draft Energy Assessment Status Report on the Gambia.

2. My mission was coordinated by Mr. Alieu N'Gum, Director of Planning in the Ministry of Economic Planning and Industrial Development (MEPID). I met with officials of the Ministry of Finance and Trade (MFT), the Gambia Utilities Corporation (GUC), the Gambia German Forestry Project, and Shell (West Africa) Ltd. For the most part, the officials were very cooperative and provided me with information, statistics, and other general insights on recent developments in the energy sector. I also met with Mr. M. Lubega, the UNDP Resident Representative to brief him about the objectives of my mission.

Review of Petroleum Issues

3. The Government of the Gambia (GOTG) appears to have done little to follow-up on the recommendations of the ESMAP report on Petroleum Supply Management. 1/ MEPID has not yet formally distributed copies of the blue cover report to the MFT and other organizations that took part in the study. The GOTG is still relying on adhoc measures to secure petroleum supply and and there have been several major disruptions in supply since 1985. Nevertheless, the GOTG has approached external organizations for the technical assistance defined in the ESMAP report. The Commonwealth Foundation for Technical Cooperation (CFTC) has agreed

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1/ The Gambia - Petroleum Supply Management Assistance "ESMAP Activity Completion Report No. 035/85, April 1985.

to send a Petroleum Specialist for a two year assignment in the Gambia as the Resident Energy Advisor to the Energy Unit of MEPID. A shortlist of prospective candidates has already been submitted to GOTG, and it is expected that the successful candidate will be able to resume his duties by the end of 1986.

4. The proposed SAL is an appropriate vehicle to monitor and instigate further action by GOTG to rationalize petroleum supply and pricing arrangements in the Gambia. This is because the GOTG: (a) recognizes the importance of ensuring that the key sectors under the Economic Recovery Program (ERP) receive adequate and regular supplies of petroleum products; and (b) has committed itself to implementing regular (quarterly) adjustments of petroleum prices to effect a pass-through of exchange rate fluctuations. In order to achieve the first objective GOTG will need to adopt more systematic and forward-looking procedures for arranging petroleum supply including the regular allocation of foreign exchange to cover petroleum imports. The GOTG will face increasing difficulties with the second objective because the existing mechanism for setting and adjusting petroleum prices is cumbersome and needs to be overhauled.

5. There may be a need to devise appropriate instruments under the SAL to monitor GOTG actions to address the following aspects:

(a) arrangements to secure financing to ensure more regular imports of petroleum imports;
(b) cooperation between GOTG, GUC and the locally represented private oil companies to ensure that a more efficient system for importing, storing and distributing petroleum products is implemented;
(c) formulating and implementating a contingency allocation plan for petroleum products during emergencies; and
(d) rationalizing and streamlining the system for setting and adjusting petroleum prices.

My observations and suggestions on these issues are presented in the sections below.

Petroleum Supply Arrangements

6. Arranging financing for Petroleum Imports. Notwithstanding the balance of payments difficulties which currently faces the Gambia, the GOTG should be encouraged to adopt a longer time horizon (minimum of one year) when negotiating financing for petroleum supplies. The petroleum supply situation has progressively worsened since 1983 because GOTG has adopted one adhoc arrangement after another to finance petroleum imports. The special tied grants from the Dutch and UK Governments have helped in providing the GOTG with some breathing space. All petroleum imported in 1984/85 under the two Dutch grants (totaling Dfl 15.0 million) has already been consumed, and the current stocks are from the final shipment of petroleum under the UK grant of about 2.5 million

pounds sterling. There is little indication that the GOTG has used this opportunity to plan for a more stable arrangement for financing future imports. Rather, the GOTG is counting on the continued use of balance of payments support (grants) from the Dutch Government to cover petroleum requirements until December 1986.

7. The GOTG is, in principle, not opposed to the direct importation of petroleum products by the private oil companies. This option is however no longer a practical one for the companies because their lines of credit with their offshore principals have been suspended. It is not likely that the GOTG will be able to settle the accumulated arrears in payments to the companies without resort to external assistance. Under these circumstances, the only other source of foreign exchange in the Gambia for the private oil companies may be the interbank market, but the amounts traded are relatively small and insignificant to cover petroleum import requirements. Prior to the establishment of the interbank market, the GOTG had attempted to ease the foreign exchange constraint on the private oil companies by arranging for the local commercial banks to set aside 30% of the monthly foreign exchange earnings of the banks in an "oil facility" account. The GOTG had directed that the amounts accruing into the "oil facility" account should be used to settle petroleum import liabilities, but the plan was soon abandoned because of insufficient funds.

8. Role of the Private Oil Companies. Since the GOTG has adopted a moratorium on the creation of new public enterprises, it seems that plans to create a National Oil Company to import petroleum have been shelved. The GOTG should whenever possible utilize the services and expertise of the private oil companies in the Gambia. Under the special petroleum grants, the role of the private oil companies has been confined to internal distribution and marketing. This is because, the grants are tied and mandate the use of suppliers based in the respective donor countries. The following arrangements have therefore been adopted by GOTG and the donors:

(a) An agent is selected through limited competitive bidding to handle the procurement and shipment of petroleum products from the donor country to the Gambia. In principle, the offshore affiliates of the locally represented private oil companies are eligible to participate in the bid. In the case of the recent grants however, the Royal Dutch Shell. Co. won the bid to supply under the Dutch Government grants, and the Crown Agents won the bid under the UK grant.

(b) When the petroleum products are landed at the Banjul terminal, Shell (W.A.) Ltd, the operator of the Storage Depot in Banjul, takes delivery of the products on behalf of GOTG. An "Entry for Warehousing" document is prepared by Shell (W.A.) Ltd for Customs certification. The stocks are then allocated by GOTG to the private oil companies (according to their respective market shares) and to GUC for power generation. Shell (W.A.) Ltd. continues to prepare a monthly "Entry ex-Warehouse"

document, which summarizes liftings of product by GUC and the companies. This document is certified by Customs and presented to the Accountant General before the companies make their payments. Besides managing operations at the Storage Depot, Shell (W.A.) Ltd. handles international bankering operations at the Yundum Airport. Arrangements for marketing and distribution within the Gambia have not been changed.

9. In the event the GOTG is able to secure untied sources of term financing (or a revolving credit) for petroleum imports, a more efficient approach would be for the GOTG to involve the private oil companies through competitive bidding, to arrange deliveries to the Gambia as follows:

(a) The Energy Unit of MEPID, acting on behalf of the Steering Committee on the Economic Recovery Program, would prepare a program for imports based on the estimated demand for the entire country over the period under consideration (usually one year). The estimates together with a recommended delivery schedule or timetable, would be prepared in collaboration with the terminal operator, and then submitted for approval to the Steering Committee;

(b) The Energy Unit of MEPID, again acting on behalf of the Steering Committee, would request the private oil companies to tender bids on a c.i.f. basis for the supply contract; and

(c) Once the bid evaluation has been approved by the Steering Committee, the successful company would be advised to proceed with organizing deliveries to the storage depot in Banjul.

As previously indicated in the ESMAP report, the GOTG, by adopting the above procedure, will avoid holding title to the products, but will be able to monitor the process of importing petroleum supplies to ensure that its foreign exchange obligations are minimized.

10. Allocation of Products. Apart from asserting in general terms that GUC should be given priority in the allocation of available stocks of diesel oil, the GOTG does not provide any firm directives for the allocation of diesel oil and other petroleum products when stocks run down to critically low levels. Since the regularity of petroleum supply will continue to be uncertain during this difficult adjustment period, it is imperative for the GOTG to establish a Contingency Allocation Plan for petroleum products. This plan would be activated during emergencies, and according to different degrees of shortages. The proposed plan should set forth the degree of rationing required depending upon the severity of shortage and the number of days of supply of each product on hand. The private oil companies have repeatedly expressed their concern about GOTG's lack of action on this matter which has been pending since

1983. 2/ The ESMAP report provides a comprehensive assessment of the situation, and outlines systematic guidelines and procedures which should be used by GOTG and the concerned organizations.

Pricing of Petroleum Products

11. Retail Price Levels. The GOTG has maintained its policy of setting petroleum price to fully reflect the cost of imports. There have been several substantial increases in retail petroleum prices since the end of 1983 (Table 1). Apart from passing on the effects of exchange rate fluctuations on the landed cost (c.i.f.), GOTG has incorporated substantial increases in the customs duty on gasoline, diesel oil (gas oil) and kerosene, 3/ with the objective of raising revenue for budgetary purposes. The GOTG has recently converted the basis for the duty from a specific rate to an ad valorem rate. This move may however complicate revenue estimation and collection by GOTG because duties would fluctuate with landed costs and exchange rates. The approved ad valorem rates of duty are 260% for gasoline, 140% for diesel oil, and 120% for kerosene.

12. Because of reports that considerable amounts of petroleum products 4/ end up being used by Senegalese consumers via "unofficial" exports and the Transgambia highway, the GOTG has over the years, attempted to equalize retail price levels in the Gambia with those in Senegal, thereby reducing the incentive for such sales. Despite these recent increases, petroleum retail prices in the Gambia are still below those prevailing in Senegal, and at the May 1986 exchange rates, the GOTG would need to increase petroleum prices further by between 25% and 60% to match those in Senegal.

13. Diesel oil is sold to artisanal fishermen at a special concessionary price of about D1.25 per liter (20 US cents/liter). The GOTG has waived the customs duty on such sales as part of its strategy to

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2/ During their working visit in July 1984, the ESMAP Petroleum Supply mission was informed that the then National Economic Advisory Committee had made some recommendations to the cabinet on mandatory allocation of products. No decision appears to have been taken on the matter.

3/ The duty on gasoline was increase for D1.16 per liter in April 1984 to D2.15 per liter in January 1986. The duty for diesel oil was increased from D1.10 to D1.35 over the same period, and from D1.03 to D1.09 for kerosene.

4/ There are no firm estimates on sales to Senegalese consumers on the highway because the private oil companies have been reluctant to disclose information on their respective sales along the highway.

encourage artisanal fishing. 5/ Similar concessions are made by the Government of Senegal. Diesel oil is sold to artisanal fisherman in Senegal at 105 CFA per liter (30 US cents/liter). The GOTG plans to install special facilities for pre-mixing and storing the fuel at a landing site near the harbor. Although this segment of the diesel oil market is very small, there is evidence that amounts purchased under this arrangement are resold for profit to other consumers. In order to curtail this activity, the GOTG should remove this concession and replace it with a more direct form of subsidy to the artisanal fishermen.

14. Petroleum Pricing system. I believe that the most pressing issue is how to rationalize the system for monitoring and adjusting petroleum prices in the Gambia. This would be necessary (a) to remove the distortions that have developed in several components since the existing price build-up was introduced in 1975 (Table 3); and (b) to simplify the price structure along the lines recommended in the ESMAP report (Table 4). This would facilitate the proposed plan to implement regular and/or automatic adjustments of energy prices.

15. The basic component in the recommended new pricing structure is the Warehouse Cost which would reflect the actual landed cost (c.i.f) of products and the prevailing exchange rate for the Dalasis. In order to absorb day-to-day fluctuations in the exchange rate, a "stabilization factor" has been incorporated in the Warehouse Cost. Since the GOTC intends to effect quarterly adjustment in energy prices and tariffs, the level of the "stabilization factor" could also be set at the beginning of each quarter. The Warehouse Cost will be the basis for pricing diesel oil sold to GUC, and hence, can be incorporated into the mechanism for adjusting the power tariffs to effect a pass-through of changes in the diesel price due to exchange rate fluctuations (i.e., the proposed fuel adjustment clause). 6/

16. Another important feature of the recommended new price structure is that it consolidates the operating costs of companies into a single marketer's margin. It is expected that the companies will shortly seek higher margins to counteract the effects of exchange rate adjustments on their ability to operate profitably. The new structure also eliminates the explicit use of financial charges that have hither to caused significant distortions because they have been used by the companies to cover the interest charges on their outstanding foreign exchange liabilities. The GOTG should negotiate a separate arrangement with the companies and their offshore principals to settle those arrears.

5/ The diesel oil is mixed with lubrication oils before it is used in the outboard motors of the fishermen.

6/ Diesel oil, which accounts for between 55-60% of the operating costs of GUC's Electricity Division, is purchased at a price equivalent to the landed cost (c.i.f.) plus harbor dues and other handling charges, but excluding duties.

Other Developments

17. Recent developments regarding ongoing and planned technical assistance in the energy sector include:

(a) A team from DANIDA visited the Gambia in April 1986 and completed the appraisal of the proposed project to install a 6 MW slow-speed diesel generator at the Kotu Power Station. The new generator will utilize heavy fuel oil and reduce GUC's operating costs; and

(b) A team for the United Nations Capital Development Fund (CDF) visited the Gambia in early June 1986, to appraise the proposed project to replace diesel and kerosene powered appliances with solar photovoltaic power systems in rural health centers and at telecommunication stations. The project is the result of an ESMAP study which is supported by GOTG as a means of improving the reliability of rural services.

Next Steps

18. I am proceeding to revise and update the draft Energy Assessment Status Report to incorporate my detailed findings. Given the new impetus provided by the ERP, I propose to reorganize the draft report to highlight the more pressing constraints facing the energy sector, and to outline components of an energy sector strategy which could reinforce the broader objectives and priorities of the ERP.

cc: Messrs. Eccles, Bauer, Menezes, (WAP), Landell-Mills (WA2DB)
Hume, Bates, Iskander, Ahmed, Saunders,
Ferroukhi, Fostvedt, (EGY);

Mmes. Bruns, Vitagliano (WA2DB); Patterson (WAP)

AArmar:vh:pas

Table 1: CHANGES IN RETAIL PRICES FOR PETROLEUM PRODUCTS (DALASIS PER LITER)

	Premium Gasoline	Kerosene	Gasoil
July 1983	1.89	1.69	1.74
February 1984	2.17	1.95	2.01
April 1984 a/	2.50	2.28	2.34
June 1985	2.70	2.41	2.50
January 1986 b/	3.50	2.50	2.75
April 1986	4.20	2.50	3.00

a/ after 25% devaluation of Dalasis.
b/ after floating of Dalasis.

Source: MFT

TABLE 2 COMPARISON BETWEEN RETAIL PETROLEUM PRICES IN SENEGAL AND THE GAMBIA

Product	Gambia a/ (I)	Senegal b/ (II)	Ratio (I/II)
Premium Gasoline	60.8	97.2	0.63
Kerosene	36.2	51.4	0.70
Diesel Oil (Gasoil) c/	43.5	58.3	0.75

a/ exchange rate (May 1986) is 1 US$ = 6.9 Dalasis.
b/ exchange rate (May 1986) is 1 US$ = 360 CFA.
c/ automotive diesel oil.

Source: Mission Estimates.

Table 3: THE GAMBIA: EVALUATION OF CURRENT PRICING STRUCTURE a/

Component	Evaluation
landed cost (c.i.f.)	The GOTG currently uses "standard" instead of actual c.i.f. prices. Although simple to compute, this method distorts both Government revenue and cost recovery systems. In addition, the method was devised for fixed peg exchange rate systems and not for flexible systems. Actual c.i.f. should be used as the basis for pricing.
Financial charges	The current charge of 8.78 bututs per liter appears to be too high. However, the validity of the figure is difficult to assess because it incorporates the financial costs associated with arrears in settling foreign liabilities incurred for imports. The resulting inability to maintain the minimum 60 - day stock level, as originally envisaged by GOTG has caused further distortions.
Depreciation and Maintenance charge	In 1982/83, actual costs were about 80% of the 2.50 bututs per liter allowed in price build-up. There is need for complete revaluation of costs to remove distortions. Should be incorporated into marketing margin.
Terminal Throughput charge	In 1982/83, the 2.20 bututs/liter charge allowed was generally in line with the actual cost of maintaining the depot. There is need for regular (annual) evaluation of actual costs incurred by the terminal operator.
Marketing Margins	The current practice of applying fixed margins does not provide "normal commercial profits" as originally envisaged when the structure was developed.
Retail Margins	The validity of these is difficult to evaluate without access to dealers' accounts. However, the margins appeared to be low in 1982/83 and should be investigated further.

a/ The structure was developed by the private oil companies in 1975 and later adopted by GOTG.

Source: "The Gambia: Petroleum Supply Management Assistance" ESMAP Report No. 033/85 April 1985; Update by mission (May 1986)

Table 4: RECOMMENDED PRICING STRUCTURE FOR REGULAR ADJUSTMENTS

Component	Description	Comments
1. Warehouse Costb/	Cost made up of actual c.i.f. + harbor dues + wharfage + terminal loss allowance + a stabilization factor.	Stabilization factor to be used to cushion variations in actual c.i.f. and exchange fluctuations.
2. Customs Duty & Import Taxes	All Customs duties and taxes on product imports should be specific taxes.	Ad valorem levels recently approved by GOTG,a/ should be replaced with specific rates based on budgetary requirements.
3. Terminal Throughput Charge	Specific charge.	To be based on actual costs in proceeding year plus 25% of component charge which would be adjusted upwards each year by rate of increase in the Consumer Price index (CPI).
4. Marketers' Margin	Percentage of warehouse cost.	Level should be re-established based on evaluation of profitability of companies. Should aim at providing the basis for "normal commercial profits" as originally envisaged in agreement between GOTG and oil companies.
5. Dealers' Margin & Delivery	Specific charge.	Will require further investigation to reset level which can then be adjusted annually to reflect CPI.

a/

	Gasoline	Diesel	Kerosene
Customs duty	260%	140%	120%
Import taxes	3.5%	3.5%	3.5%

b/ Warehouse cost and level of stabilization factor would be adjusted at beginning of each quarter to reflect changes in exchange rate during preceding quarter.

Source: "The Gambia: Petroleum Supply Management Assistance" ESMAP Report No. 035/85, April 1985; updated by mission (May 1986).

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

IVC - Energy Sector
IVC - F338
Africa - ESIE General
INT|83|005

DATE: June 18, 1986

TO: Files

FROM: L. Perine, EGYS1

SUBJECT: Côte d'Ivoire: ESIE In-Depth Assessment
ESMAP Activity Report

1. Max Wilton (WAPEG) and I spoke on the telephone today to agree on modifications to the division of labor and timing of the above report. These modifications were necessary, as EGYS1's request for accelerating report production (memo dated June 13, 1986) conflicted with mission and leave schedules.

2. We agreed that, when the RCA report arrives in early July, I will draft the initial ESMAP report and carry it through successive internal reviews to the yellow cover stage by the end of August. This will be done in close consultation with Steve Berkman (WAPED), who has been supervising the project with Mr. Wilton. Mr. Wilton indicated that he is willing to review a draft of the ESMAP report while on leave in early August, if necessary. This will minimize the probability that major disagreements will arise when the yellow cover report is reviewed by the region shortly after Mr. Wilton's return at the end of August. With the incorporation of Mr. Wilton's comments at that stage, the report can then be carried into green cover by mid-September, as per the EGYS1 schedule.

3. With regards to the presentation and format of the ESMAP report, we decided that these will be a function of the size and content of RCA's report. Ideally, we'd like this to become the main part of the ESMAP report. However, the draft RCA report reviewed by Messrs. Berkman and Wilton in May (a copy of which Mr. Wilton will send to me before he leaves) was rather lengthy (150+ pages) and recommendations are not grouped and prioritized. We agreed that if these shortcomings are not improved upon in the next draft, the text of the RCA report will not necessarily be included in the ESMAP report. Also, the ESMAP report most likely will re-organize the priorities among RCA's recommendations and be more specific about identifying financial and technical assistance requirements. In any case, ESMAP should be able to present clearly the elements of a full revitalization program.

4. Since time is short between now and Mr. Wilton's departure, he will not be able to give EGYS1 a preliminary outline for the ESMAP report. He did suggest, however, that the ESMAP report be oriented as "sales" document to generate support for ESIE among co-donors. He suggested also that particular care be given to recommendations to redefine the roles of UPDEA, member governments (especially the Côte d'Ivoire), donors, and ESIE itself, in the revitalization of the school.

cc: Messrs. Bauer (O/R), Wilton (WAPEG); Berkman (O/R) (WAPED);
Gabriel (WAPPS); Montfort (EGYS1)

Ms. Risen (WAPPS)

LPerine:lap/bre

P-1867

INT|83|005

WATC

Niger -

ESMAP

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

DATE: June 17, 1986

TO: Ms. J. Shanberge, EGYS1

FROM: Ignatius A. Menezes, Senior Economist, WAPEG

SUBJECT: NIGER - Improved Stoves Project
Mid-Term Progress Report

1. We liked the above-mentioned report and are happy to note that the project seems to have gotten off to a successful start. I hope the activities can continue to be expanded under the proposed energy project. There are two comments I have:

(a) I understand the use of the private sector in Niger was a key to the success of the project but this is not sufficiently emphasized in the report.

(b) The important questions that are raised on page 33 do not seem to have been fully answered. In particular, the question about the impact of the project on woodfuel consumption.

2. By the way, can some other terms be found for «fagot» and «kettle»?

cc: Messrs. Bauer (o/r), Davis, Wilton (WAPEG);
Montfort, Floor (EGYS1).

IMenezes:mc

FORM NO. 27 - OCR
(3/82)

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INT/83/005

6/17

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PAGE 1 OF 1

OFFICIAL DEPT/DIV ABBREVIATION: EGYS2

MESSAGE NUMBER

TEST NUMBER (FOR CASHIER'S USE ONLY)

START HERE

TO: HOTEL GUESTS MESSRS. MOAZZAM ZIAD ALAHDAD AND
ROBERT CLEMENT-JONES, MT. KENYA SAFARI CLUB, NAIROBI, KENYA.
RE: ESMAP FUELWOOD PROJECT IN SUDAN. RECEIVED FOLLOWING
TELEX FROM MR. PRATTLEY IN KHARTOUM QUOTE YR TLX 15 MAY 1986
RE INT/83/005, FUELWOOD/FORESTRY PROJECT FEASIBILITY.
GOVERNMENT REQUESTS POSTPONEMENT MISSION TILL FIRST WEEK
JULY 1986, AS DIRECTOR GENERAL ABDEL RAHMAN SULLI'S NOT
IN SUDAN DURING LAST WEEKS OF JUNE 1986. PLEASE CONFIRM
SUITABILITY NEW TIMING. UNQUOTE PLEASE SEND TELEX YOUR
END AND ADVISE ME OF ANY REVISED PLANNING. REGARDS,
JOCHEN SCHMEDTJE, ACTING DIVISION CHIEF, EGYS2, ENERGY
DEPARTMENT, THE WORLD BANK, WASHINGTON, DC

END OF TEXT

PINK AREA TO BE LEFT BLANK AT ALL TIMES

INFORMATION BELOW NOT TO BE TRANSMITTED

CLASS OF SERVICE: TELEX

TELEX NO.: 963 — 25360

DATE: June 17, 86

SUBJECT: ESMAP : Sudan Fuelwood Proj

DRAFTED BY: BSito

EXTENSION: 74544

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature): Jochen Schmedtje, Actg Div Chief, EGYS2

DEPARTMENT: Energy

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(3/82)

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F338

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PAGE	OF	OFFICIAL DEPT/DIV ABBREVIATION	MESSAGE NUMBER	TEST NUMBER (FOR CASHIER'S USE ONLY)
1	1	EGYS1		

START HERE

MR. JACOB JANSEN, NETHERLANDS ECONOMIC INSTITUTE, ROTTERDAM, THE NETHERLANDS, RE: IVORY COAST SAWMILL RESIDUE ECONOMIC ANALYSIS, AS PER YOUR CONVERSATION TODAY WITH MR. LEITMANN, THE FOLLOWING SHADOW PRICE RATIOS SHOULD BE USED IN YOUR ECONOMIC ANALYSIS: (FOR 1986-1990) FOREIGN EXCHANGE = 1.18, UNSKILLED LABOR = 0.84, SEMI-SKILLED LABOR = 0.80, MANAGEMENT = 0.88, DISCOUNT RATE = 8.25 PERCENT; (FOR 1991-1995) FOREIGN EXCHANGE = 1.20, UNSKILLED LABOR = 0.73, SEMI-SKILLED LABOR = 0.63, MANAGEMENT = 0.72, DISCOUNT RATE = 10.08. REGARDS, BERNARD MONTFORT, DIVISION CHIEF, ENERGY STRATEGY AND PRE-INVESTMENT DIVISION I, 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:	TELEX NO.: 25490	DATE: June 16, 1986
SUBJECT: THE NETHERLANDS	DRAFTED BY: JLeitmann:sdw	EXTENSION: 75541
CLEARANCES AND COPY DISTRIBUTION: CC: Floor (EGY)	AUTHORIZED BY (Name and Signature): Bernard Montfort, Div. Chief, EGYS1	
	DEPARTMENT: Energy	
	SECTION BELOW FOR USE OF CABLE SECTION	
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INT/83/005
4/13/86

Back to office report

THE WORLD BANK INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

STP - Consultative Group
STP - LEAP - General
STP - Energy Sector
STP - Cr 1590
GUB - ENERGY SECTOR
cc F338

DATE: June 13, 1986

TO: Mr. Bernard Montfort, Division Chief, EGYS1

FROM: Katrina Sharkey, EGYS1

EXT: 75535

6/13/86

SUBJECT: Sao Tome and Principe and Guinea Bissau - Technical Assistance Missions Back-to-Office Report

SAO TOME AND PRINCIPE: ROUND TABLE FOLLOW-UP MEETING

1. Round Table: General Aid Coordination Issues. In line with the decision taken at the Round Table held in Brussels in December 1985, the objective of the follow-up meeting (May 17-21, 1986) was to provide the opportunity for the GSTP and donors to hold sectorial consultations on three priority themes, namely rural development and fisheries, water and energy and "desenclavement" (domestic and international transport, telecommunications). In the case of the first and third themes, the Bank attended largely as an informed observer.

2. The same donor countries represented at the Brussels meeting also attended on this occasion (France, Portugal, Federal Republic of Germany, United States, Sweden) but some additional countries were present, namely Brazil, Egypt, Japan, Zaire and Italy.In addition to the Bank and the UNDP, the following international agencies participated :African Development Bank, Commission of the European Communities, Economic Community of Central African States, FAO and World Food Programme. A complete list of participants is found in Annex 1.

3. The meeting was opened on May 17 by Senhora Alda do Espirito Santo, President of STP's National Assembly and Acting President of the Democratic Republic of STP (DRSTP). The working groups were presided by His Excellency Fradique de Menezes, Minister of Foreign Affairs and Cooperation and co-presided by Mr. Ion Popescu, UNDP Principal Regional Administrator. The meeting was officially closed by His Excellency Manuel Pinto da Costa, President of the DRSTP.

4. In the course of sectorial discussions, all of which were held in plenary session, the GSTP expressed a wish to complement the Round Table discussions by holding a meeting in STP in November 1986 with NGO's which may be interested in collaborating in projects resulting from the Round Table discussions. Donors responded favourably and the PNUD will probably assist the GSTP in its organization. The DRSTP also requested donors to consider placing the country on their lists of target countries because, to date, STP is the only lusophone LDC not to figure as a high priority. Minister de Menezes also emphasized that his country is

looking for grant aid rather than concessional loans or credits in view of the serious balance of payments deficit, forecast to be some $US 7.5 million for 1986.

5. Energy and Water. The discussion was chaired by Mr. Angelo Bonfim from the Ministry of Foreign Affairs and co-chaired by Mr. Carlos Mena of WAPEG. Mr. Norberto da Costa Alegre, Director of Industry and Energy was rapporteur and I filled the co-rapporteur function. (See Annex 2).

6. Minister de Menezes drew participants attention to the fact that the UNDP/World Bank Energy Assessment Report had formed the basis for the energy discussions and had provided the GSTP with a series of useful projects for planning assistance to the sector. The main problem areas in the energy sector were cited as:

- state of disrepair of the main power plants
- deficient transmission and distribution system
- high technical and non-technical losses
- poor management of the sector
- lack of adequately trained staff.

In order to assist the power system, the Bank reiterated its commitment to financing, under Credit 1590-STP, the rehabilitation of the main generating plants and the distribution system. The same Credit could be used to finance some technical/administrative assistance to EMAE, the power and water utility. (Projects no. 3 and 5 of the Energy Assessment Report). Please refer to Mr. Carlos Mena's BTOR for more details.

7. For the woodfuels sector, I informed the meeting of the Bank's willingness to finance a preliminary forest inventory (Project 7 of Energy Assessment), a woodfuels supply and demand study (Project 8 of Energy Assessment) and a study on the ecological impact of woody biomass use for drying increased quantities of cocoa on State Enterprises. On the request of WA2DA, I explained that this activity could be financed by a Special Project Preparation Facility (SPPF) but that the GSTP would be required to submit a formal request to IDA for this purpose. During bi-lateral discussions with the Directorate of Industry and Energy and the Ministry of Agriculture and Livestock, I clarified the procedures with which the GSTP will have to comply in requesting an SPPF. We also made some progress in preparing Terms of Reference for the project which, with the collaboration of WA2DA, I will finalize shortly. The terms for

the ecological study in particular need further work before the three-component package can be sent to the GSTP for approval.1/

8. The UNDP confirmed that its Energy Account will finance overseas training to STP nationals in Energy Planning and Management and in Petroleum Procurement Operations (Project no. 2 of the Energy Assessment). UNDP also offered to assist STP in the power rehabilitation programme by financing of necessary equipment from its Special Equipment Fund (UNEF). The UNDP also offered to make some resources available to ESMAP from STP's next Country IPF (estimated to total some $US 2.8 million) and it now awaits a response to the offer from the GSTP/ESMAP. The GSTP will contact us if they wish us to manage priority projects identified in the Energy Assessment.

9. With regard to interventions on energy by other donors, the Swedish delegate said that his government may be interested in assisting the forestry sector. Informally, I was told that such assistance could be directed to Fuelwood and Multi-purpose Species Trials (Project no.12 of the Energy Assessment). The Portuguese delegation's interest is in institutional support and training in the power and forestry sub-sectors (Projects 1, 5, 6 and 11 of the Energy Assessment). The head of the French delegation announced his country's interest in collaborating in the rehabilitation of the power sector and in providing technical assistance if and where required. The Caisse Centrale will send an identification mission to STP in the near future.

10. The water sector discussion was brief and was based on a recently-completed report prepared for the GSTP by the Bank (Estudo Sectorial sobre Aducao de Agua e Saneamento). Given that the GSTP received the draft report only a few days before the meeting, it was not in a position to comment in depth on its findings. It was clear however that the report will constitute the basis for future assistance to the sector. The Bank report has identified projects totalling some $US 2.0 million, of which about $US 600,000 has been committed by the African Development Bank for technical assistance to EMAE. We invited comments on the report as soon as they are available.

11. The EEC referred to the tri-partite project already underway in Sao Joao dos Angolares, financed by EEC/STP/Portugal, and offered the possibility of further EEC assistance to water at a later date, perhaps in the area of Ribeira Peixe.

1/ A former component of Energy Assessment Project no.7 aiming at assisting GSTP with the establishment of forestry legislation has been eliminated because it has been carried out recently by a team of FAO consultants. Their report is currently with the GSTP for consideration.

12. Portugal offered to finance the setting up of a water testing laboratory which entails the construction of bacteriology and physics/chemistry laboratories and the provision of related equipment and technical assistance.

13. Rural Development and Fisheries. In summary, the discussions on the rural development theme concluded that:

- rural development will continue to form the basis of STP's economic development potential for the foreseeable future
- an important element in assisting the sector is the support to the related institutional framework
- the preparation of sound agricultural statistics is imperative to the implementation of projects in the sector
- all future projects should take the security of food supply into account.

14. In response to existing project briefs, several donors offered to provide financial/technical assistance as presented in Annex 3.

15. On fisheries, no project brief had been prepared although all parties agreed that STP's potential for developing this activity is very real. Offers of assistance from donors are also summarized in Annex 3.

16. Desenclavement (Transport and Communications). The isolation of STP in terms of road, sea and air transport in addition to the inadequacies of the existing domestic and international telecommunications network produced an animated discussion. The few actual commitments are summarized in Annex 4.

GUINEA BISSAU: TECHNICAL ASSISTANCE TO THE POWER SECTOR

17. I arrived in Bissau on May 22nd. The objective of my visit was to discuss and reformulate where necessary the preliminary recommendations for technical assistance services to the power sector which were approved by the GGB as presented in Activity Completion Report no. 033/85 in April 1985.

18. For the purpose of launching this activity under ESMAP, financing has already been obtained from SIDA for one of the four components in the T.A. programme, namely the preparation of a map of the distribution system.

19. During my mission I had meetings with Mr. Afonseca, Director General for Energy at the Ministry for Natural Resourses, Industry and Energy. I met with Mr. Brandao, Director of Guinea Bissau's power and water utility (EAGB) and visited the Bissau thermal power plant which is

currently undergoing an emergency rehabilitation with assistance from the Bank, the UNDP and the German Government. I was received by His Exc. Filinto Barros, Minister for Natural Resourses, Industry and Energy, who stressed the urgency of implementing the T.A. programme as a complement to the new installation and repair of generating capacity. I drew the Minister's attention to the lack of supervision and coordination of recommended assistance activities in the energy sector which are dispersed among the EEC, France, Germany, SIDA, UNDP, and the Bank. I recommended that the GGB nominate one person (perhaps the UNDP technical advisor to DGE or the UNDP Resident Representative himself) to play such a supervisory role for the sake of improved coordination of activities. A list of persons met is attached in Annex 5.

PROPOSED TECHNICAL ASSISTANCE PROJECTS

20. Component 1: Technical Assistance and On-The-Job Training for Plant Operators and Distribution Network Personnel. Resulting from my discussions with Messrs. Afonseca and Brandao, we reached an understanding that this component should be modified. The original entailed the preparation of training programmes for EAGB personnel. We accepted that greater effectiveness would be achieved by the provision of two technical experts to train staff in the operation and maintenence of existing and new generating and distribution equipment. In addition, personnel would be trained in the use of suitable computer facilities for the collection and processing of generation and distribution data. Finally, at the end of the T.A. period the experts would draw up shortlists of outstanding training and maintenence equipment needs for future action.

21. Component 2: Institutional Support to Metering, Administrative and Procurement Procedures. The scope of this activity will remain largely as defined in Activity Completion Report no. 033/85, while the diagnostic nature of the consultant services provided will change in order to concentrate on the actual on-the-job transfer of skills to EAGB personnel in the abovementioned areas. Although the activity is aimed at assisting power, it is clear that it will also cover all aspects relating to water.

22. Some two years ago DGE received two APPLE 11 computers from the Swedish government which have never been taken out of their cases. If it proves to be viable to use these as yet unused facilities for accounting and administrative operations, the terms of reference will include the necessary transfer of technology to local personnel. If the facilities prove to be incompatible with existing software packages used for small power utility management, it may be necessary to foresee the purchase of basic hardware as part of the project cost.

23. Management assistance to DGE/EAGB's procurement operations, formerly presented as a full component of the T.A. programme, will now be curtailed and incorporated as part of the administrative assistance. The procurement requirements of EAGB are both minimal and infrequent and it

was agreed that the provision of a short-term consultant to assist the small existing workforce in improving its operation will adequately meet local needs.

24. The definitive terms of reference for the accounting and administrative component will complement another T.A. activity which DGE is currently negotiating with Electricite de France for assistance to the accounting and administrative operations of EAGB. ESMAP is currently in contact with EDF to ensure an efficient dovetailing of respective activities

25. Component 3: Proposed Map of Bissau Distribution System. With financing already received from SIDA, this component will be implemented according to the terms of reference presented in the April 1985 report.

CONCLUSIONS AND FUTURE ACTION

26. The mission provided me with an opportunity to reformulate preliminary terms of reference for the ESMAP activity as described above. I reached an understanding with the DGE that ESMAP will prepare new terms of reference to include the use of a suitable management information system.

27. ESMAP will examine proposals for the execution of the programme submitted recently to DGE by the Enetric consulting firm (an offshoot of Electricidade de Portugal) and advise on whether or not they would be suitable to carry out the programme.

28. Financing is still sought by ESMAP for components 1 and 2 above. The Netherlands government and SIDA may be interested in financing these activities and have requested finalized terms of reference as soon as they are available in order to make a decision.

Distribution

Messrs. Eccles, Bauer, Davis, Menezes, Mena, Patorni (WAO);
Reichelt, Singh, Gil, Assis (WA2);
Churchill, Bourcier, Hume, Saunders, Sadove, Fish, Dosik, Heron, Iskander, Bates, Ferroukhi (EGY).

Mesdames: Leach, Kawabata (WAP).

KSharkey:md

List of Participants at the Round Table follow-up Meeting held in Sao Tome, DRSTP, 17-21 May 1986

Participants from DRSTP

- Senhora D. Alda do ESPIRITU SANTO, President of the Popular National Assembly and Acting President of DRSTP
- Excellency Fradique de MENEZES, Minister of Foreign Affairs and Cooperation
- Excellency Agostinho RITA, Minister of Planning and Internal Trade
- Excellency Carlos Mengses BRAGANCA GOMES, Minister of Industry, Transport, Fisheries & Tourism
- Mr. Arlindo GOMES, Ministry of Foreign Affairs
- Mr. Angelo de JESUS BONFIM, Ministry of Foreign Affairs
- Mr. Higino WILL, Ministry of Foreign Affairs
- Mr. Rodrigo GUILHERME, Ministry of Agriculture and Livestock
- Mr. Norberto da COSTA ALEGRE, Director of Industry and Energy, Ministry of Industry, Construction and Housing
- Mr. Marcelino ALVES NARCISO, Ministry of Transport
- Mrs. Myriam de MENEZES, Ministry of Foreign Affairs and Cooperation

African Development Bank

- Mr. Felix-Prosper NSETH MI NSETH

World Bank

- Mr. Carlos MENA, WAPEG
- Ms. Katrina SHARKEY, EGYSI

Commission of the European Communities

- Mr. Frederic BARON, Administrator, Brussels
- Mr. Glauco CALZUOLA, Resident Adviser of the EEC in DRSTP
- Mr. Dominique DAVID, EEC delegate in Gabon

Economic Community of Central African States

- Mr.Kabongolo LUKUMU, Administrator

FAO

- Mr. Teklesadik ESHETU, Representative for DRSTP in Angola
- Mr. Jean Marie PHILIPPE, Special Adviser to Development Department, Rome.

World Food Programme

- Mr. Messan BAMEZON, Deputy Representative

United Nations Development Programme

- Mr. Ion POPESCU, Regional Administrator
- Mr. Albert YUMBULA DJEMBA, Resident Representative in DRSTP
- Ms. Else KORNERUP, Deputy Resident Representative in DRSTP
- Mr. Maurice DEWULF, UNDP Consultant, President of Consultative Cooperation Council
- Mr. Jean-Pierre DIEHL, UNDP Consultant

Federal Republic of Germany

- Dr. Wilhelm Otto LAMPE, Charge d'Affaires for DRSTP, German Embassy, Angola.
- Mrs. Gisela Ataide LAMPE, Adviser

Egypt

- Excellency Ahmed NABIL ELSALAWY, Plenipotentiary Ambassador to DRSTP

France

- Mr. Robert SORBY, Head of Mission responsible for DRSTP, Ministry of Cooperation
- Mr. Luc Le CABELLEC, Head of DRSTP Mission, Caisse Centrale de Cooperation Economique
- Mr. Frederic FULLENWARTH, Resident Head of Cooperation Mission, DRSTP
- Mr. Francois FEREY, Deputy Director, Caisse Centrale de Cooperarion Economique
- Mr. Dominique ROJAT, Head of Mission, Ministry of Cooperation
- Mr. Georges BUREAU, Caisse Centrale de Cooporation Economique

Italy

- Mr. Andrea PERUGINI, Charge d'Affaires for DRSTP at the Italian Embassy, Angola

Japan

- Mr. Seisuke FUKUSHIMA, Adviser, Japanese Embassy, Gabon

Portugal

- Mr. Manuel LOPES da COSTA, Vice President of Institute for External Cooperation (I.C.E.), Ministry of Foreign Affairs
- Mr. Antero Luciano NOBRE RODRIGUES, Senior Technical Expert, I.C.E.
- Mr. Vinicio PACHECO MARQUES, Head of Agriculture and Fisheries Division
- Mr. Antonio Jose ROSADO de SOUSA, Director of Economic and Technical Assistance, I.C.E.

Sweden

- Mr. Finn ALTON, Head of Department, Swedish Embassy, Angola

United States of America

- Mr. William McGLYNN, Economic Councellor, American Embassy, Gabon

Zaire

- Excellency ILANGWA-E-YOKA, Plenipotentiary Ambassador

Follow-up Meeting to Round Table held in RDSTP, May 17-21, 1986

Conference Organization

President: Excellency Fradique de Menezes, Minister of Foreign Affairs and Cooperation
Co-President: Mr. Ion Popescu, Head of UNDP Delegation

Commission 1: Rural Development and Fisheries

President: Mr. Arlindo Gomes
Co-President: Mr. Georges Bureau (France)
Rapporteur: Mr. Rodrigo Guilherme
Co-Rapporteur: Mr. Dominique Rojat (France)

Commission 2: Water and Energy

President: Mr. Angelo Bonfim
Co-President: Mr. Carlos Mena (World Bank)
Rapporteur: Mr. Norberto Costa Alegre
Co-Rapporteur: Ms. Katrina Sharkey (World Bank)

Commission 3: Desenclavement

President: Mr. Higino Will
Co-President: Mr. Manuel Lopes da Costa (Portugal)
Rapporteur: Mr. Marcelino Narciso
Co-Rapporteur: Mr. Gonzalo de Sousa (Portugal)

General Rapporteur: Mrs. Myriam de Menezes
Assistant General Rapporteur: Mr. Jean-Pierre Diehl
Secretary: Mr. Jean-Pierre Diehl
Assistant Secretary: Mr. Maurice Dewulf

Possibilities for Donor Participation in Future
Technical/Financial Assistance to
RDSTP's Rural Development and Fisheries1/Sectors.

1. Title of Project: Cattle Rearing and Coconut Palm Growing-Combined Scheme
   Total Investment Requested: $US 266,000.
   Interested Agencies: (Tech. or Fin. Assistance): UNDP (Tech/Fin), France (Tech), Zaire (Tech)

2. Title of Project: Rehabilitation of the Porto Real and Sundy State Enterprises
   Total Investment Required: US$ 4.0 million
   Interested Agencies: UNDP (Tech/Fin), World Food Programme (Tech)

3. Title of Project: Equipment and Technical Support to Medium-Sized Private Farms
   Total Investment Required: $US 200,000
   Interested Agency: EEC

4. Title of Project: Development of Fruit-Growing
   Total Investment Required: $US 280,000
   Interested Agency: BADEA (Fin)

5. Title of Project: Ribeira Peixe Oil Mill
   Total Investment Required: $US 3.6 million
   Interested Agencies: EEC/EIB (Tech/Fin), UNDP (Tech/Fin)

6. Title of Project: Rural Habitat Improvement
   Total Investment Required: $US 1.7 million
   Interested Agencies: ILO and UNDP (Fin), UNCDF, World Food Programme (Fin), France (Tech/Fin), EEC (Fin)

France and the EEC confirmed the possibility of participating in a project to equip the industrial fishing base at Neves.

1/ While no specific fisheries projects were presented for discussion, the Japanese delegation informed the meeting of his government's intention to finance the development of small-scale fishing projects. It appears that FIDA and certain non-governmental organizations are also interested in assisting this sector.

Donor Participation in Future Technical/Financial Assistance to RDSTP's Transport and Communications Sectors (Desenclavement)

1. Title of Project: Improvements to the running of the ports of Sao Tome and Santo Antonio
   Total Investment Required: $US 2.0 million
   Interested Agencies: EEC (Tech), RFA (Fin), Portugal (Tech), UNDP

2. Title of Project: Civil Aviation Assistance and Development Study
   Total Investment Required: $US 190,000
   Interested Agencies: EEC/ECOCAS

3. Title of Project: Improvement to the Sao Tome Airport
   Total Investment: $US 3.0 Million
   Interested Agency: ADB 1/

1/ The mission transmitted the Bank's letter of May to the UNDP representative expressing strong reservations on the economic justification for the project. The French and German delegations received the Bank's view on an informal basis as both have major doubts about supporting the project also.

List of Persons Met During My Mission to Guinea Bissau

Exc. Filinto BARROS, Minister for Natural Resourses, Industry and Energy
Mr. Antonio JESUS de BARROS Afonseca, Director General for Energy,
Ministry of Natural Resourses, Industry and Energy
Eng. Carlos de PINHO BRANDAO, Director of EAGB
Mr. Luis Alberto NEVES JACOB, Director of Services, EAGB
Mattias ZOLLNER, Kreditanstalt fur Wiederaufbau, RFA
M. BOUGET, Consultant, Electricite de France
Mr. Miguel da GRACA, UNDP Resident Representative, Guinea Bissau
Jose CAETANO MARQUES, Resident Representative of Enetric/Partex
Consultancy Firm

THE WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

✓ INT/63/005
cc. WAIC-F336

DATE: June 13, 1986

TO: Mr. J.U. Richter, EGYS1 and S. Ouahes, WAPEG

FROM: B. Montfort, Chief, EGYS1 and J.F. Bauer, Chief, WAPEG

SUBJECT: Mauritania : Energy Mission : Terms of Reference

1. On or about 22 June, 1986 you will arrive in Nouakchott, Mauritania for about two weeks to: (a) assist in the preparation of energy related covenants for the Structural Adjustment Credit, and (b) discuss with the government the preparation of an ESMAP program.

Energy Sector Analysis for the Structural Adjustment Credit

2. Under coordination of Mr. Richter, and with the assistance of Mr. S. Ouahes (Power engineer, WAPEG) and Mr. L. Ceccaldi (Petroleum Refining and Marketing Specialist, Consultant) you will analyze the following issues, as a basis for the Government's strategy in the energy sector:

(a) Government pricing policy (including taxation) for electricity and petroleum products, with a view to establishing pricing which is based on economic principles (i.e., CIF import cost for petroleum products, marginal costs for electricity) and which is conducive to meeting financial requirements of the energy enterprises and of major energy consumers;

(b) Options and requirements for improving the efficiency of operations in the petroleum and electricity subsectors (i.e., production, procurement, marketing) and the efficiency of energy end-use in the major energy consuming sectors. This includes the evaluation of household energy conservation and substitution to limit the over-exploitation of Mauritania's biomass resources to more sustainable levels;

(c) The impact on energy supplies of domestic petroleum refining;

(d) Investment needs and financing needs to implement energy supply and demand management options over the 1986-90 period with particular emphasis on projects to be implemented in 1987;

(e) Institutional requirements at the sectoral and enterprise levels, with emphasis on the managerial, financial, and training requirements; and

(f) scope and requirements for establishing an appropriate balance of private and public sector activity in petroleum procurement and marketing and in electricity operations.

3. Taking into account the current rehabilitation program for SONELEC, Mr. Ouahes will pay special attention to:

(a) further investment needs for the continued maintenance of the existing units over the period 1986-89;

(b) operating costs, tariffs, and financing requirements;

(c) action to be taken to reduce technical and administrative losses and improve collections;

(d) options for reducing the cost in the secondary centers and, in particular, for the electrification of the Senegal valley; and

(e) progress status for implementation of the investment program, commitment from the Government to set targets and deadlines for the project processing, and maintenance contract provisions.

4. You will coordinate closely with Mr. R. Vaurs (WA2DB) and Ms. M. Alexander (WAPPS) who will visit Mauritania under separate terms of reference, and with Mr. Baranshamaje (Resident Representative), whom you will keep apprised on the progress of your work. The mission will participate in meetings to be organized by Mr. Vaurs on the SAL component dealing with the energy sector strategy. Those meetings will discuss the contents of the energy component and timetable to implement the measures considered as conditions for the SAL operation.

5. Before leaving Mauritania, you will submit to the Government an Aide-Memoire outlining your preliminary conclusions and recommendations. Within four weeks of your return from Mauritania, you will submit the section related to energy for incorporation into the President's Report on the SAC.

Preparation of ESMAP Program

6. Mr. Richter will review the Government's technical assistance needs in the energy sector including for preparing investment projects and for policy and institutional development. He will apprise the Government on the ESMAP program and seek agreement with the Government on priority areas for further consideration.

Cleared with & cc: Mr. Vaurs (WA2DB)

cc: Messrs. Bouhaouala (WAP); Bourcier (EGY);
Knotter, Beguery (WANVP)
Chaparro, (Ms.) Alexander (WAPPS); Berkman (WAPPT);
Landell-Mills (WA2DB); Calegari (WAPWS);
B.C. Davis (WAPEG); Dupuy (LEGWA);
Baranshamaje (Res. Rep., Nouakchott);
Ms. Prefontaine (LOAAF).

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INTBAFRAD, OUAGADOUGOU, BURKINA, JUNE, 11, 1986.
ATTN. CRAIG CC DAILLY.
REF ESMAP APPROBATION DU FINANCEMENT NORVEGIEN.
HAVE RECEIVED FOLLOWING FROM MINISTER OF PLAN -
QUOTE - COMME SUITE A VOTRE LETTRE NO 0127/86 DU 29 AVRIL
1986 RELATIVE AU FINANCEMENT DU PROJET D'ENERGIE DES
MENAGES URBAINS, J'AI L'HONNEUR DE PORTER A VOTRE CONNAISSANCE
QUE LE GOUVERNEMENT BURKINABE MARQUE SON ACCORD POUR :
- L'ACCEPTATION DU FINANCEMENT NORVEGIEN A TRAVERS ESMAP
(PROGRAMME DE GESTION DU SECTEUR ENERGIE),
- LE LANCEMENT IMMEDIAT DE L'ETUDE.

AUSSI, JE VOUS SERAIS RECONNAISSANT DES DISPOSITIONS NECESSAIRES
QUE VOUS VOUDRIEZ BIEN FAIRE PRENDRE POUR LE LANCEMENT IMMEDIAT
DE L'ETUDE.
VEUILLEZ AGREER, MONSIEUR LE REPRESENTANT RESIDENT,
L'ASSURANCE DE MA HAUTE CONSIDERATION.
YOUSSOUF OUEDRAOGO -
MINISTRE DE LA PLANIFICATION ET DU DEVELOPPEMENT POPULAIRE.
UNQUOTE -

REGARDS, ROGERSON.

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ALT RTD FROM:WAF

NNNN

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(3/82)

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PAGE 1 OF 1

OFFICIAL DEPT/DIV ABBREVIATION: EGYS1

MESSAGE NUMBER

TEST NUMBER (FOR CASHIER'S USE ONLY)

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MR. ALFRED MUBANDA, UNDEVPRO, ACCRA, GHANA. RE: HIRING OF LOCAL CONSULTANTS, MESSRS. BENJAMIN HAGAN AND MARTIN BENDZAM, C/O RU-TEK CONSULTANTS LTD. FOR THE ESMAP GHANA WOOD INDUSTRIES RESIDUE STUDY. (AAA) WOULD APPRECIATE YOUR HIRING CONSULTANTS LOCALLY BEGINNING JUNE 9 FOR APPROXIMATELY 10 WEEKS. DETAILED TERMS OF REFERENCE FOR THE CONSULTANTS WILL BE GIVEN TO YOU BY MR. MATTHEW MENDIS. (BBB) PLEASE CHARGE US FOR FEES AND LOCAL TRAVEL BY IOV J-09295 QUOTING UNDP INT/83/005 IBRD 5450, BUDGET LINE 11.04 AND THE DATE/SENDERS OF THIS TELEX. (CCC) YOUR COOPERATION IN THIS MATTER IS GREATLY APPRECIATED. REGARDS, KAH HIE LAU, CHIEF UNDP TRUST FUNDS SECTION, LOAN DEPARTMENT, INTBAFRAD.

END OF TEXT

PINK AREA TO BE LEFT BLANK AT ALL TIMES

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974

CLASS OF SERVICE: TELEX TELEX NO.: OPAC 2195 DATE: 6-11-86

SUBJECT: ESMAP Ghana Study- Hiring of Local Consultants

DRAFTED BY: Margaret Walsh/vmh

EXTENSION: 75426

CLEARANCES AND COPY DISTRIBUTION:
cleared with & cc: Mr. Montfort (EGYS1)
cc: Messrs. Bagheri (LOATF), Mendis (CON) o/r Boroumand (EGYS1) o/r

AUTHORIZED BY (Name and Signature): H. Lau, Chief, UNDP Trust Funds Section

DEPARTMENT: Loan

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BOOK OF TWO

INT/82/095

6/11/86

TX DUSIT THANI HOTEL

BANGKOK

THAILAND

TELEX NO. 19188

788 -

S MR. KASHIWAYA

INTBAFRAD

TOKYO

S761

JAPAN

TELEX NO. ~~26838~~

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OFFICIAL DEPT/DIV ABBREVIATION: EGYS1

MESSAGE NUMBER

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HOTEL DUSIT THANI, BANGKOK, THAILAND. FOR YOUR WORLD BANK GUEST MR. IAN HUME. COPY TO MR. KASHIWAYA, INTBAFRAD, TOKYO, JAPAN. (AAA) HAVE EXPLAINED ESMAP TO ECFA, MOFA, MOF AND MITI. LEFT WITH THEM SAMPLES OF COMPLETED ESMAP REPORTS, PROFILES OF ON-GOING AND PROPOSED PROJECTS AND STATUS OF FINANCING FOR CY86. (BBB) MOF AND MITI LUKEWARM ACCORDING TO ME BUT STANLEY PERCH MORE HOPEFUL. MOFA VERY INTERESTED BUT NOT YET ABLE TO CONFIRM AVAILABILITY OF DOLLARS 100,000. NEED TO DIGEST THE INFO I LEFT WITH THEM. (CCC) SUGGEST YOU FOLLOW UP WITH MOFA AND ECFA, IF YOU CAN ADVANCE YOUR ARRIVAL TO TOKYO BY ONE DAY. (DDD) FOLLOWING TELEX DESPATCHED TODAY TO YAMAGUCHI. QUOTE (AAA) WOULD LIKE TO THANK YOU FOR YOUR KIND HOSPITALITY. (BBB) AM MAILING KANASE'S CV FOR YOUR INFORMATION AND REVIEW. (CCC) LOOKING FORWARD TO HEARING FROM YOU ON MOFA'S REACTION TO MY EXPLANATIONS ON ESMAP AND ANY ADDITIONAL QUESTIONS THEY MAY HAVE. (DDD) IAN HUME'S PRESENT TRAVEL PLANS CALL FOR ARRIVING TOKYO 20 JUNE P.M. AND LEAVING 22 JUNE UNQUOTE. BEST REGARDS, BERNARD MONTFORT, CHIEF, ENERGY STRATEGY AND PREINVESTMENT DIVISION I, WORLD BANK.

END OF TEXT

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CLASS OF SERVICE:	TELEX	TELEX NO.:	BOOK OF TWO	DATE:	6/11/86
SUBJECT: Japan - donor		DRAFTED BY: BMontfort:aaf		EXTENSION: 74844	
CLEARANCES AND COPY DISTRIBUTION:		AUTHORIZED BY (Name and Signature): Bernard Montfort, Chief, EGYS1			
		DEPARTMENT: Energy			
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OFFICIAL DEPT/DIV ABBREVIATION: EGYS1

MESSAGE NUMBER

TEST NUMBER (FOR CASHIER'S USE ONLY)

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INTBAFRAD, ACCRA, GHANA, ATTENTION: MR. MATTHEW MENDIS. RE: YOUR TELEX OF JUNE 6, 1986, MR. KAH HIE LAU, CHIEF, UNDP TRUST FUNDS SECTION HAS SENT THE FOLLOWING TELEX TO MR. ALFRED MUBANDA, UNDEVPRO, ACCA, GHANA. QUOTE RE: HIRING OF LOCAL CONSULTANTS, MESSRS. BENJAMIN HAGAN AND MARTIN BENDZAM, C/O RU-TEK CONSULTANTS LTD. FOR THE ESMAP GHANA WOOD INDUSTRIES RESIDUE STUDY. (AAA) WOULD APPRECIATE YOUR HIRING CONSULTANTS LOCALLY BEGINNING JUNE 9 FOR APPROXIMATELY 10 WEEKS. DETAILED TERMS OF REFERENCE FOR THE CONSULTANTS WILL BE GIVEN TO YOU BY MR. MATTHEW MENDIS. (BBB) PLEASE CHARGE US FOR FEES AND LOCAL TRAVEL BY IOV J-09295 QUOTING UNDP INT/83/005 IBRD 5450, BUDGET LINE 11.04 AND THE DATE/SENDERS OF THIS TELEX. (CCC) YOUR COOPERATION IN THIS MATTER IS GREATLY APPRECIATED. UNQUOTE. REGARDS, BERNARD MONTFORT, DIVISION CHIEF, ENERGY STRATEGY AND PREINVESTMENT DIVISION I, INTBAFRAD.

END OF TEXT

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CLASS OF SERVICE: TELEX

TELEX NO.: ~~2207~~

DATE: 6-11-86

SUBJECT: ESMAP Ghana Study- Hiring of Local Consultants

DRAFTED BY: Margaret Walsh/vmh

EXTENSION: 75426

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature): Bernard Montfort, Div. Chief, EGYS1

DEPARTMENT: Energy

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INT/83/005

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

DATE: June 11, 1986

TO: Messrs. Grut, Taylor (EGYS1); Hussain, Anan, Narong (CON); Ms. Hines (CON).

FROM: Bernard Montfort, Division Chief, EGYS1

EXT: 74844

SUBJECT: ESMAP: Thailand - Fuelwood Project Identification Terms of Reference

Terms of reference are attached for your participation in an ESMAP mission to Thailand to formulate a fuelwood forestry project for subsequent financing by the international donor community and the Government. You will convene at The Hyatt Central Plaza Hotel in Bangkok on June 15, at 5 pm to plan the details of the mission together. The mission will end July 4.

Attachment

cleared in substance with and cc: Messrs. Ahmed (AEASE); Ms. Mott (AEPA2).

cc: Messrs. Blaxall, Nayyar, Ahmed, Wadsworth (AEP);
Ikram, Kikuchi (AEA); Spears (AGR);
Hume, Sadove, Saunders, McCarthy,
Dosik, Bates, Ahmed (EGY);
Kim (UNDP Res. Rep., Bangkok, Thailand);
Jechoutek (Res. Rep., Bangkok, Thailand).

RTaylor:hm

THAILAND
FUELWOOD PROJECT IDENTIFICATION MISSION
June 15 to July 4, 1986

TERMS OF REFERENCE

General

1. These terms of reference define the responsibilities of the team members of the first of two missions to formulate and prepare a fuelwood forestry project for subsequent financing and implementation by the international donor community and the Royal Thai Government. Additional background is presented in an Activity Initiation Brief (April 1986).

2. Staff of the World Bank's Energy Sector Management Assistance Program (ESMAP), and international consultants, should work closely with their respective counterparts during the mission. If during the mission the consultants on social forestry, forest economics, agroforestry and rural sociology become aware of information gaps which need to be filled before the preparation mission, they should, before the end of the mission, prepare terms of reference for the required follow-up studies, and decide if local expertise is available to undertake such studies, or if they require an input by foreign expertise. The mission will meet in Bangkok on Sunday afternoon June 15 to plan its work, and the mission will end on Friday July 4. Before the end of the mission the consultants will give the mission leader a brief report on their provisional findings, for the wrap-up meeting and for use during the preparation of the main text of the identification report.

Mission Leader (Mikael Grut, ESMAP)

3. You will take the lead responsibility for this ESMAP activity, and function as overall supervisor for the project preparation. In particular, you will be responsible for:

(a) preparing the fieldwork, recruiting the consultants, fielding the mission, and supervising the fieldwork and the subsequent preparation of the project document;

(b) coordinating with relevant Government agencies, particularly the National Energy Administration (NEA), the Royal Forestry Department (RFD), the National Economic and Social Development Board (NESDB) and the Department of Technical and Economic Cooperation (DTEC).

(c) coordinating with the related ESMAP activity "Accelerated Dissemination of Improved Cooking Stoves and Charcoal Kilns", with the World Bank's Regional Mission in Bangkok, and with other relevant development agencies such as UNDP, FAO, USAID and ADAB (Australian Development Assistance Bureau).

(d) deciding on possible follow-up studies to be carried out after the mission;

(e) defining together with the other team members the appropriate role of relevant agencies in project implementation;

(f) elaborating with relevant government agencies a system of supportive policy and incentive measures, e.g.:

(i) raising the stumpage fee payable for fuelwood from the National Forest Reserves;

(ii) improving the protection of the National Forests;

(iii) dispelling the doubts which apparently exist among the heads of schools and temples about their secure ownership of trees which they establish;

(g) discussing project concepts and formulation with donor agencies potentially interested in financing the project.

Report Coordinator (Robert Taylor, ESMAP)

4. You will assist the Mission Leader in preparing and coordinating the field work, and under the initial supervision and guidance of the Mission Leader, you will be responsible for the subsequent preparation of the project document, utilizing the contributions of the consultants. In particular, upon your return to headquarters, you will prepare the mission's back-to-office report, supervise and coordinate the report writing of the international consultants, and take responsibility for the completion of a complete and consistent draft document. In the subsequent stages, you will be responsible for processing the draft document into the final version that will be published by ESMAP.

Social Forestry Specialist (Mir Javet Hussain, International Consultant)

5. Keeping in mind that the objective of the project is to increase production of affordable fuelwood in the Northeast Region, particularly by involving the private sector and institutions like schools, temples and army camps in the planting of fuelwood and multipurpose trees, you will formulate the project activities in the fields of seedling production and dissemination (RFD nurseries or village nurseries), forestry extension (by RFD or by some other rural development extension service, with technical backing from RFD), project-related training and research, RFD plantations, and whatever other actions you

recommend in order to achieve the project objective. In order to decide on the scale of the seedling production and dissemination program, you will have to estimate the likely seedling demand by the non-RFD sector year by year and area for area, for the five years of the proposed project implementation period. In the case of communal woodlots you will recommend how the benefits should be divided between the participants, so that the latter know from the beginning the conditions under which they participate.

6. You will identify the corresponding required project inputs both in physical terms (manpower, equipment, fuel, materials, technical assistance etc.) and in financial terms, year by year for a period of five years. You will also estimate the recurrent costs after the implementation period, as well as the expected project benefits. You will provide these estimates to the Forest Economist, who will need them for the rate-of-return calculations.

7. Together with the Agroforestry Specialist you will advise on species to be used in the project to complement Eucalyptus camaldulensis which at present has a virtual monopoly position in treeplanting in the Northeast Region. You will decide on possible tree improvement work to be done by the project. You will also advise on soil preparation, planting espacements, weeding schedule and fire protection to be recommended by or used in the project.

8. You will make recommendations regarding the protection and management of the remaining natural forests; regarding the setting up of a monitoring unit to report on the progress of the project; regarding the RFD structure (to be illustrated in an organizational chart) most appropriate for the efficient implementation of the project, and on whether any institution-strengthening (e.g. a Management Information System) is required.

9. Together with the Mission Leader you will liaise closely with the FAO Regional Forestry Officer in Bangkok, to ensure that the activities of the proposed fuelwood project do not duplicate those of the planned UNDP/FAO forestry extension project; and with the Thailand Development Research Institute team which is preparing the Rural Land Use Project, proposed for financing by the Bank.

10. After the end of the mission you will spend four weeks report-writing at the World Bank in Washington, under the supervision of the Report Coordinator.

Forest Economist (Deborah Hines, International Consultant)

11. Working closely with the Social Forestry Specialist, you will estimate the financial and economic rates-of-return of various fuelwood supply scenarios. To conduct the financial analysis, you will need to collect and review available data on prices for woodfuels in the Northwest Region. In your economic rate-of-return analysis you will try

to quantify environmental benefits, which are expected to be the main benefits of the proposed project; in this you will work closely with the Agroforestry Specialist.

12. The various fuelwood supply scenarios for which you should calculate rates-of-return include:

(a) Plantations established by farmers or other entrepreneurs for the production of: (i) Fuelwood; (ii) Charcoal; (iii) Fuelwood or charcoal (whichever gives the highest rate-of-return) in conjunction with building poles, pulpwood, and small timber.

When evaluating the economic costs and benefits of farmers' woodlots in monetary terms, you can cost the time of the farmers and their families during the agricultural off-season at a shadow rate equal to three quarters of the going rate of agricultural labor. For the case of farmers who do not buy fuelwood, but collect it free of charge, you should calculate the rate-of-return of fuelwood lots in terms of time, as well as in terms of money; the difference between the time at present spent each year on collecting the family's fuelwood requirements, and the time that would be spent if a fuelwood lot were established, would constitute the costs and the benefits in such a "time flow" analysis. During the period of establishment of the fuelwood lot, this alternative would be more time-consuming than the collection alternative, and the difference would constitute the time cost of the woodlot; later, however, the fuelwood lot would be the less time consuming alternative, and that difference would then constitute the annual time benefit of the woodlot.

(b) Plantations established by RFD, with outputs like those listed in (i) to (iii) above. In this alternative the infrastructure cost would presumably be heavier than in the case of private plantations, and there would also be overheads, but on the other hand yields are generally higher.

c) Agroforestry plantings by the private sector - say for the two combinations of trees and crops that seem most promising to the Agroforestry Specialist.

13. Besides calculating the rates-of-return for the above models, you should also calculate the financial and economic rates-of-return for the project as a whole, or for the project components if there are such components in the sense that they could conceivably be implemented on their own.

14. Possible residual values at the end of the period of analysis, such as roads, buildings, or standing timber, will be entered as a revenue in that year. In the economic analyses land will be valued at either the opportunity cost or the market value. You will subject your calculated rates-of-return to some form of sensitivity analysis of the key variables identified.

15. After the end of the mission, you will spend three weeks report-writing in Washington, under the supervision of the Report Coordinator, and cooperating closely with the Social Forestry Specialist who will provide you with much of the data for your analyses. The most suitable timing of your report-writing might be from July 14 to August 1, but you can discuss this with the Social Forestry Specialist.

Agroforestry Specialist (Anan Polthanee, Local Consultant)

16. You will evaluate the various agroforestry approaches which have been tried in the Northeast, e.g. in the USAID-financed village woodlot project, in the UNDP/FAO forest rehabilitation project, and in RFD's research plots, and on the basis of this evaluation you will recommend agroforestry packages for the proposed project. You also will estimate what the effect on agricultural production (including both crop and animal husbandry output) would be if fuelwood were eventually to become unavailable in the Northeast and the rural population were forced to depend on agricultural residues as its main household fuel, and you will communicate your quantitative estimate to the Forest Economist who needs it for the calculation of the project's economic rate-of-return.

17. You will recommend, in consultation with the Social Forestry Specialist, trials of agroforestry packages which could alleviate the fuelwood problem but which may not yet have been tried in the Northeast Region, e.g. (possibly) the planting of fodder trees, windbreaks, combinations of trees and grazing, or the use of Terminalia arjuna, as in Uttar Pradesh, India, for the reclamation of saline soils and at the same time for silk production. Together with the Rural Sociologist you will investigate the farmers' degree of appreciation for different species of trees, as a function of the effect of these species on crop production and their yield of other products besides wood.

18. Within three weeks after the mission you should prepare the full report (in English) of your findings and recommendations, and send it to the mission leader for inclusion in the joint identification report.

Rural Sociologist (Narong Srisawas, Local Consultant)

19. As the problems experienced by social forestry projects are generally of a sociological rather than a forestry nature, you will determine the constraints which prevent a greater degree of participation by the non-RFD sector (small farmers, other entrepreneurs, institutions) in the planting of fuelwood and multipurpose tree species. Such constraints could for example be lack of land (although the farmers seem to tolerate trees even in the middle of their valuable paddy fields), lack of time (although in the long run fuelwood collection from distant natural sources may be more time consuming), no security of "tree tenure" or at least the belief that no such security exists, low prices for fuelwood and charcoal, no knowledge of how to make charcoal (for sale to the towns and cities), and so on. In your analysis of sociological

constraints, you should fully review available documentation of the results of past afforestation efforts, recent surveys, studies, and reports, particularly those available in the Thai language only. You will make recommendations on how the identified constraints can be overcome or alleviated, and estimate the costs of implementing these recommendations.

20. You will make recommendations on how institutions like schools, wats and military camps can be encouraged to participate to a greater extent in treeplanting.

21. Within three weeks after the mission you should prepare the full report (in English) of your findings and recommendations, and send it to the mission leader for inclusion in the joint identification report.

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INT|83|005-

BOOK OF THREE:

1) DR. A. J. SUJARDI

SF

DIRECTOR FOR NEW ENERGY DEVELOPMENT

MINISTRY OF MINES AND ENERGY

796-

JAKARTA, INDONESIA TELEX NO.: 62319 ENERGY IA

COPY TO:

2) OK ROYAL NETHERLANDS EMBASSY

~~796-~~ OKC/FR

JAKARTA, INDONESIA ~~TELEX NO.: 31326~~

3) MR. F. FORD

$1999

JAKARTA, INDONESIA TELEX NO.: INIBAFRAD

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CLASS OF SERVICE: Telex TELEX NO.: DATE: 6-10-86

SUBJECT: Indonesia: Brick, Tile and Lime

DRAFTED BY: BFrueh:dap EXTENSION: 75256

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AUTHORIZED BY (Name and Signature):

DEPARTMENT:

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TO DR. A. J. SUJARDI, DIRECTOR FOR NEW ENERGY DEVELOPMENT, MINISTRY OF MINES AND ENERGY, JAKARTA, INDONESIA. COPY TO ROYAL NETHERLANDS EMBASSY, JAKARTA, AND MR. F. FORD, INTBAFRAD, JAKARTA, INDONESIA. RE: ESMAP: IMPROVEMENT OF ENERGY EFFICIENCY IN BRICK, TILE AND LIME INDUSTRIES. (AAA) MR. FRUEH (ESMAP) PLANS TO ARRIVE IN JAKARTA ON JUNE 15, 1986, 4:20 PM ON THAI AIRWAY 413 TO JOIN MESSRS. ZAINNUDIN AND DE LANGE, BANKING AND BUSINESS CONSULTANCY, JAKARTA, INDONESIA, WHO HAVE ALREADY STARTED PREPARATORY WORK. HE WILL CONTACT YOUR OFFICE ON THE MORNING OF JUNE 16 FOR A BRIEFING ON THE STATUS OF THE WORK. (BBB) OTHER MISSION MEMBERS MESSRS. THADANI (ESMAP), VAN DER VELDEN (CONSULTANT BRICK AND TILE ENGINEER) AND TAUBMANN (CONSULTANT LIME PRODUCTION ENGINEER) WILL BE ARRIVING ABOUT JULY 1, 1986. BEST REGARDS, BERNARD MONTFORT, CHIEF, ENERGY STRATEGY AND PREINVESTMENT DIVISION I, WORLD BANK, WASHINGTON.

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DRAFTED BY: BFrueh:dap

EXTENSION: 75256

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cc: Messrs. Thadani, Floor (EGYS1)

AUTHORIZED BY (Name and Signature): Bernard Montfort, Chief, EGYS1

DEPARTMENT: Energy

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THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT|83|005

DATE: June 10, 1986

TO: Messrs. J. Thadani and B. Frueh (EGYS1)

FROM: Bernard Montfort, Chief, EGYS1

SUBJECT: Indonesia: Improving Energy Efficiency in the Brick, Tile and Lime Industries -- Terms of Reference

1. You will visit Indonesia in June/July, 1986, for periods of about three and five weeks respectively, as detailed below, together with Messrs. J. van der Velden, H. Taubmann and D. Zainnudin (consultants), whose individual terms of reference are attached, to prepare a project proposal for improving energy efficiency in the brick, tile and lime industries, with principal focus on the islands of Java and Bali, where concentrations of these industries are located. You will coordinate and cooperate with the Ministry of Mines and Energy, Jakarta, as your direct counterpart agency.

2. Mr. Thadani (Project Manager) will arrive in Jakarta on or about July 2, to lead the mission, coordinate field work, provide support to individual members and/or modify their terms of reference as necessary, and ensure mission objectives generally. He will:

(a) maintain necessary contact with the UNDP Resident Representative and Bank Resident Mission;

(b) lead discussions with the principal Government officials and Agencies concerned with the areas of the mission's concern;

(c) with the assistance of members of the mission, define the role of the various concerned agencies in project implementation;

(d) identify the major risks that the proposed project might face and suitable safeguards;

(e) recommend procedures for project implementation, monitoring, procurement, etc., that would be acceptable to all parties involved;

(f) identify likely sources of funds for the energy conservation program to be proposed;

(g) coordinate the preparation of a detailed outline of the mission's draft project proposal before the completion of field work in Indonesia; and

(h) coordinate the preparation of a short Aide Memoire to be left with the Government as well as the Back-to-office report which is to be submitted in accordance with normal Bank practice at the end of the mission.

3. Mr. B. Frueh (Economist) will precede Mr. Thadani to Indonesia by about two weeks, arriving on or about June 15, for a stay of about 5 weeks, to first supervise the ongoing preparatory work being done by Messrs. Zainnudin and de Lange, under the terms of reference dated May 9, 1986 (copy attached) and then to participate in the mission from July 2. He will have principal responsibility for the financial and economic aspects of the energy conservation project to be prepared by the mission and will also have primary responsibility for preparing the mission's draft project proposal. In particular, he will:

(a) supervise Messrs. Zainnudin's and de Lange's work that is to be done before the end of June and assist them in finalizing their report;

(b) prior to the arrival of the other members of the mission, develop a detailed work and travel schedule in consultation with concerned agencies and make logistic arrangements;

(c) determine the economic and financial cost of supply of alternative fuels for the brick, tile and lime production industries;

(d) investigate the economics of fuel supply systems and, if necessary, recommend appropriate measures of improvement;

(e) in cooperation with the Brick and Tile and the Lime Production Engineers:

(i) determine the scope for interfuel substitution in the medium- and long-run and recommend a viable strategy for implementation;

(ii) determine the economics of energy efficiency improvement measures proposed; and

(iii) develop a costed and scheduled investment and technical assistance program to improve energy efficiency in the brick, tile and lime industries. You will ensure that the proposed energy conservation program is financially and economically viable.

(f) recommend, if required, measures to improve the prevailing marketing systems with a view to increasing market transparency regarding product qualities;

(g) recommend appropriate types of financing for the proposed energy conservation program; and

(h) identify supportive measures required for a successful implementation of the energy conservation program and advise on the measures' implementation.

Attachment

cc and cw: Mrs. Hamilton (AEAIN); Mr. Nayyar (AEPEN)

cc: Messrs. Floor (EGYS1);
Ford, Resident Mission, Jakarta, Indonesia

OFFICE MEMORANDUM

Attachment I

DATE: June 3, 1986

TO: Messrs. J. van der Velden, H. Taubmann, and D. Zainnudin (Consultants)

FROM: Bernard Montfort, Chief, ECYS1

SUBJECT: Indonesia: Improving Energy Efficiency in the Brick, Tile and Lime Industries -- Terms of Reference

1. You will visit Indonesia in June/July 1986 as a team to prepare a program to improve the energy efficiency in the brick, tile and lime industries with a principal focus on the islands of Java and Bali. The mission leader will be Mr. Thadani, who will be assisted by Mr. Frueh. In carrying out your specific tasks, you will take into account the information that is being collected by local consultants (see separate terms of reference of May 9, 1986) on these industrial subsectors, which will be available to you upon the arrival of the main mission in the beginning of July, 1986. Your specific terms of reference are as follows:

Mr. J. van der Velden (Brick and Tile Production Engineer)

You will visit Indonesia between July 2 and July 23, 1986, as part of a mission to prepare an energy conservation program for the brick, tile and lime industries. Following the fieldwork you will prepare your section of the draft report at your home base and subsequently visit Washington for two weeks to assist in finalizing a draft report on the subject project. You will be responsible for all technical and technic-related aspects of the program covering the brick and tile industries. In particular, you will:

(a) review the prevailing production techniques, energy consumption pattern and type and quality of products in the brick and tile production industry;

(b) assess the performance of the types of kilns used and the prevailing firing methods and techniques, especially in terms of potential energy savings. This assessment should be based on a representative sample of artisan brick making, semi-mechanized and mechanized plants and a thorough review of those plants with comparatively large energy consumption;

(c) advise on the range and relative priority of appropriate technical options -- or, alternatively, packages of technical options -- available for improving energy efficiency (housekeeping measures, retrofitting, process change or equipment replacement) and assess their costs and likely benefits. Emphasis should be given to low-cost measures with quick financial return;

(d) assist the Economist in determining the scope for eventual interfuel substitution by advising on technical and financial aspects of any process or equipment change required in case of a fuel switch;

(e) support the Extension Specialist in designing a costed and scheduled program of action for improving energy efficiency (including eventual interfuel substitution) in the brick and tile production industry. Apart from an energy conservation program covering the entire brick and tile production industry on Java/Bali this includes also any experimental or pilot projects needed for demonstration purposes and/or to further evaluate technical options especially with a view to their adaptability under local conditions;

(f) recommend in cooperation with the Extension Specialist extension measures required to ensure successful implementation of an energy conservation program. This includes identifying local technical counterparts required for the program, assessing training needs, designing training curricula, establishing draft terms of reference for all technical staff needed under the project and recommending any technical support measures;

(g) prepare, if required, bid documents for the procurement of material and equipment needed under the energy conservation program in the brick and tile industry.

Mr. H. Taubmann (Lime Production Engineer)

In the context of the subject activity, you will visit Indonesia as part of a mission between July 2 and July 23, 1986 for fieldwork required. Following the fieldwork you will prepare your sections of the draft report at your home base and subsequently visit Washington for two weeks for finalization of the draft report. Your responsibilities are all technical and technic-related aspects concerning energy efficiency improvement in the lime industry. In particular, you will:

(a) review the prevailing production techniques and energy consumption pattern in the lime industry;

(b) assess the performance of the kilns used and the prevailing firing techniques and methods especially in terms of energy savings. This should be based on the information provided by the local Rural Industries Specialist and field visits to a representative sample of lime production plants;

(c) advise on the range and relative priority of appropriate technical options -- or packages of technical options -- available to improve the energy efficiency in the lime industry and assess their costs and likely benefits. Emphasis should be given to low-cost measures with quick financial return;

(d) assist the Economist in determing the scope for eventual interfuel substitution by advising on technical and financial aspects of any process or equipment change required in case of a fuel switch;

(e) support the Extension Specialist in designing a costed and scheduled program of action for improving energy efficiency (including eventual interfuel substitution) in the lime production industry. Apart from an energy conservation program covering the entire lime production industry on Java this includes also any experimental or pilot projects needed for demonstration purposes and/or to further evaluate technical options especially with a view to their adaptability under local conditions;

(f) recommend in cooperation with the Extension Specialist extension measures required to ensure successful implementation of an energy conservation program. This includes identifying local technical counterparts required for the program, assessing training needs, designing training curricula, establishing draft terms of reference for all technical staff needed under the project and recommending any technical support measures;

(g) prepare, if required, bid documents for the procurement of material and equipment needed under the energy conservation program in the lime industry.

Mr. D. Zainnudin (Extension Specialist)

Following your preparatory work for the subject activity (see separate Terms of Reference) you will join the main mission on or around July 2, 1986 for about three weeks to participate in the mission's work as the Extension Specialist. After completion of the fieldwork you will have one week to prepare your section of the mission's draft project preparation report at your home base. Subsequently you will visit Washington for about two weeks to assist in finalizing the draft project preparation report. In particular you will:

(a) analyze the brick, tile and lime producing industries in Indonesia with special emphasis on Java/Bali to the extent required to prepare a sound energy conservation project for these industries. This will cover both the production as well as the marketing side. Your analysis will be based on the information obtained during the preparatory fieldwork which is

to be carried out by yourself and Mr. de Lange (see separate Terms of Reference attached). You will complement and, where required, verify available information required for the definition and justification of an energy conservation program. Together with the Economist you will assess the relative importance of these industrial subsectors to the economy;

(b) estimate likely future levels of brick, tile and lime demand and -- together with the Brick and Tile and the Lime Production Engineers -- the future fuel requirements of these industrial subsectors with and without the implementation of an energy conservation program. Potential energy savings through such a program should be viewed against a range of different scenarios;

(c) establish the status of ongoing and planned projects/programs of local and international organizations in the field of brick, tile and lime production in Indonesia;

(d) recommend a costed and scheduled implementation program for experimental or pilot project work taking into account planned and ongoing work as to be determined under (c);

(e) recommend a strategy and a program of action for implementing an energy conservation program in the subject industries on Java and Bali. This should include also the definition of the most appropriate role of any local or international organizations that are or intend to become active in these industrial subsectors.

(f) recommend extension measures required to ensure successful implementation of the pilot program as well as the subsequent energy conservation program focusing on Java/Bali;

(g) assist the Economist in reviewing prevailing marketing systems in these industrial subsectors and in recommending measures to improve the market transparency with respect to product qualities; and

(h) recommend a reliable project organization for implementing any investment or technical assistance packages identified to improve the energy efficiency or facilitate fuel-substitution in the brick, tile and lime production industries. This will include: assessment of manpower requirements, identification of non-technical counterparts, drafting of the terms of reference for non-technical project staff and definition of any institutional support required. The local Rural Industries Specialist will assist you in identifying suitable project counterparts.

THE WORLD BANK INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

Attachment II

DATE: May 9, 1986

TO: Messrs. R. de Lange and D. Zainnudin, Jakarta, Indonesia, Consultants

FROM: Mr. Bernard Montfort, Division Chief, EGYS1

EXT: 74844

SUBJECT: Indonesia: Improving Energy Efficiency in the Brick, Tile and Lime Industries - Terms of Reference

1. To help prepare the data base for a proposed project for improving energy efficiency in the brick, tile and lime production industries, you will analyze existing documentation on these three industries and the respective product markets principally for the islands of Java and Bali. You must take note of the national context to the extent necessary for issues that relate to supply of fuels and product markets.

2. You should begin work on this task not later than June 2, 1986, and complete a final draft of your report not later than July 4, 1986. You will need to update and/or verify data and also collect some primary information through interviews with official and non-official agencies and a sample of suppliers, manufacturers and end-users. It is expected that the data collection and investigation phases will take not more than four weeks and you will have at least one full week to prepare your report. Your work will be supervised by Mr. B. Frueh, EGYS1, who will be joining you in Jakarta on June 16, 1986. In particular, you will:

(a) analyze the subject production sectors with respect to: areas of concentration/location of plant sites, range of products, scale of production, seasonality of production, production method, type of kilns used, number of operators, number of officially registered plants per region, estimated number of non-registered plants per region, number of people employed in the sectors and type and quantity of energy used;

(b) establish organizational charts for the subject industrial subsectors showing the main interactions between distinguishable types of brick, tile and lime producers, energy and raw material suppliers, types of consumers, institutions of the whole and retail sectors where applicable, financial institutions and any government agency;

(c) determine the main structural changes that have taken place in these industrial subsectors over the past 15 years and elaborate on their causes;

(d) determine the accessability for the various types of brick, tile and lime producers to financial markets, especially credit markets. In this context, name the financial institutions involved in the brick, tile and lime industries and their financing arrangements offered;

(e) analyze the brick, tile and lime markets. This will include a description of market segments especially by size, location, type of consumer, end-use of products, competing materials, importance of these products on these market segments and seasonality of demand;

(f) elaborate on the main determinants of future demand in the market segments identified under (e) and estimate the likely future demand (about 15 years) for bricks, tiles and lime viewed against a range of scenarios. The assumptions made for the various market segments should be specified;

(g) assess the marketing and distribution systems for bricks, tiles and lime. This includes a description of the organizational structures from producers over wholesale and retail sectors to consumers, collection of a series of reference prices for the subject products (prices at kiln site, contract prices, wholesale and retail prices) and prevailing transport costs. Also derive through a number of sample interviews with end-users and indicative picture on the prevailing product supply transparency, viz: prevailing information on product supply aspects such as location of alternative supply sources, product quality and purchasing arrangement;

(h) determine the available amount and location of fuel resources that are used or could be used to meet the energy requirements of Java's brick, tile and lime industries. Fuels to be focused on are: firewood, charcoal, coal, agricultural residues, sawmill wastes, used motor oil, gas and other petroleum products;

(i) determine for the fuel types mentioned under (h) the main alternative uses and location of those consumer groups eventually competing for these fuels. Where applicable, analyze the existing marketing/distribution procedures for the various fuels, which includes organizational structures, transport modes and for a sample of reference points fuel prices.

(j) determine the calorific value of those main agricultural residues that could be used as a fuel in the brick, tile or lime industries.

3. You will outline your findings in a concise report to be made available to the main mission for the subject activity upon the mission members' arrival in Jakarta in early July, 1986.

cc and cw: Messrs. Albouy (AEP); Thadani (EGYS1);

Mrs. Choksi (AEA)

BFrueh:dap

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

INT/83/005

June 10, 1986

Mr. Jan H. van der Velden
TNO, P.O. Box 342
7300 AH Apeldoorn
The Netherlands

Re: Indonesia: Energy Efficiency in Brick, Tile and Lime Industries

Dear Mr. van der Velden:

-n/att

Enclosed please find the final terms of reference for the upcoming mission to Indonesia as well as some background information you may find useful for our work.

Since Mr. Frueh, who has been your direct contact person, will be leaving for Indonesia shortly, you may contact Mr. Jivat Thadani (202-477-4216) between June 23 and June 27 if you have further questions. Mr. Frueh will make sure that all mission members are booked in the same hotel (Borobodur, Jakarta), where a start-off meeting is planned for the morning of June 2, 1986.

Best regards,

Bernard Montfort
Chief
Energy Strategy and
Preinvestment, Division I
Energy Department

Attachment

cc and cw: Mr. J. Thadani (EGYS1)

BFrueh:dap

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

June 10, 1986 INT/83/005

Mr. Harro J. Taubmann
Ernest-Reuterr Straase 34
D-7888 Rheinfelden
Federal Republic of Germany

Re: Indonesia: Energy Efficiency in Brick, Tile and Lime Industries

Dear Mr. Taubmann:

Enclosed please find the final terms of reference for the upcoming mission to Indonesia as well as some background information you may find useful for our work.

Since Mr. Frueh, who has been your direct contact person, will be leaving for Indonesia shortly, you may contact Mr. Jivat Thadani (202-477-4216) between June 23 and June 27 if you have further questions. Mr. Frueh will make sure that all mission members are booked in the same hotel (Borobodur, Jakarta), where a start-off meeting is planned for the morning of June 2, 1986.

Best regards,

Bernard Montfort
Chief
Energy Strategy and
Preinvestment, Division I
Energy Department

Attachment

cc and cw: Mr. J. Thadani (EGYS1)

BFrueh:dap

IN7/83/005

LEMBAGA LETRIK SABAH
(SABAH ELECTRICIFY BOARD)

Ibu Pejabat
Lembaga Letrik Sabah
Komplek Bangunan Pejabat Pos Besar
Tingkat 7
88670 KOTA KINABALU

Bil. Surat Kami PD 201/033/15
(Our Ref.)
Bil. Surat Tuan:
(Your Ref.)

Tarikh: 7 June 1986

Date Rec'd. ----------
Date Ack'd. ----------
Assigned to ----------

Dr. Hussin Razavi
East Asia And Pacific Projects Dept.
The World Bank
1818 H Street N. W.
Washington D. C.
20433 USA.

Dear Sir,

WORLD BANK MISSION GROUP TO SEB.

The recent visit by the World Bank team to the Sabah Electricity Board (SEB) was an opportunity for me and my officers to understand deeper the role of the World Bank with the hope that it shall bring forth closer rapport between this organisation and yours which was missing in the past.

The SEB is undergoing changes and expansion in line with it set objectives as a power utility to produce and deliver electricity in the most efficient and cheapest manner possible to meet the fast growing demand prevailing in the State of Sabah. I strongly feel, after the discussion that I had with you and your team members, that the World Bank can contribute and play a major role in assisting the SEB to achieve the set targets. I sincerely hope that after having some familiarity with our organisation and system development past, present and future, the World Bank will be able to come forward to offer us guide and assistance in every respect of the utility function.

One immediate area that I recall was mentioned where the World Bank could assist us is in the review of operational efficiency and improvement in the system. I would appreaciate if my request through you now could be address accordingly for such assistance to be considered by the World Bank as a first step for the closer rapport earlier mentioned.

Finally my warmest regard to your and you fellow team members and sincerely hope that there will be more opportunities for us to meet in future.

Yours sincerely
for SABAH ELECTRICITY BOARD

(IR. HJ. MAAROF B. MUAT
GENERAL MANAGER

MSA/cy

Record Removal Notice

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File Title	Barcode No.
UNDP - INT/83/005 - Energy Sector Management Assistance Programme [ESMAP] - Correspondence - 1984/1986 - Volume 6	30189796

Document Date	Document Type	
June 10, 1986	Telex / Cable	

Correspondents / Participants
To: Margaret Walsh
From: Ernie and Robert

Subject / Title
[Thailand Improved Stove and Kilns - Hiring local consultants]

Exception(s)
Personal Information

Additional Comments

The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information or other disclosure policies of the World Bank Group.

Withdrawn by	Date
Kim Brenner-Delp	November 02, 2022

UNITED NATIONS DEVELOPMENT PROGRAMME PROJECT REVISION
(IN U. S. Dollars)

Country: Interregional

Project Title: Energy Sector Management Assistance Programme

Project Number: INT/83/005/C/01/42

The purpose of this budget revision is to:

(i) reflect actual expenditures in CY85;

(ii) incorporate in CY86 budget a third-party cost-sharing contribution from the Canadian International Development Agency (CIDA) to support Energy Sector Management Assistance Programme activities:

(a) in Kenya Power Sector Master Plan Study ($717,896) described in Attachment I;

(b) in Kenya Solar Water Heating Study ($80,965) described in Attachment II; and

(c) in Colombia Energy Strategy ($228,620) described in Attachment III

In accordance with the UNDP/CIDA Agreement dated November 14, 1984.

Agreed on behalf of the Executing Agency
Anthony A. Churchill
Director, Energy Department
The World Bank

6/12/86
Date

Agreed on behalf of UNDP
Timothy S. Rothermel, Director
Division for Global and Interregional Projects
United Nations Development Programme

9 June 1986
Date

REVPROJ,p.20
RPO/vmh/June 10, 1986

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

Country : Interregional
Number : INT/83/005/C/01/42
Title : Energy Sector Management Assistance Program

				ACTUALS		ESTIMATED	
		S/M	TOTAL	S/M	CY85	S/M	CY86
10.0	Personnel						
11.1	Program Manager a/	40	297,612	28	212,612b/	12	85,000
11.2	Experts	6	43,983	-	-	6	43,983
11.4	Consultants	77	596,090	17	178,102	60	417,988
11.99	Component Total	123	937,685	45	390,714	78	546,971
13.0	Administration						
13.1	Secretary a/	40	93,986	28	63,986b/	12	30,000
19.0	Component Total	40	93,986	28	63,986	12	30,000
20.0	Subcontracts						
21.0	Acres International	96	673,913	-	-	96	673,913
29.0	Component Total	96	673,913	-	-	96	673,913
99.0	Project Total	259	1,705,584	73	454,700	186	1,250,884
100.0	Cost Sharing						
101.0	CIDA/Forestry Uganda	17	178,102	17	178,102	-	-
102.0	CIDA/Kenya Solar Water Heating	11	80,965	-	-	11	80,965
103.0	CIDA/Kenya Power Sector	102	717,896	-	-	102	717,896
104.0	CIDA/Colombia - Energy Strategy	33	228,620	-	-	33	228,620
199.0	Total Cost Sharing	163	1,205,583	17	178,102	146	1,027,481
999.0	Total UNDP Contribution		500,000		276,598		223,403

a/ These posts are based in the UNDP Division for Global and Interregional Projects in New York under the terms of an Associated Agency Agreement between the World Bank and the UNDP Office of Project Execution (OPE).

b/ Inclusive of actual delivery reported by OPE for each post in Calendar Years 1983 and 1984.

esmap-budg, p.1
RPOwen:vmh
June 12, 1986

PROJECT BUDGET COVERING COST-SHARING CONTRIBUTION
(In U.S. Dollars)

Country : Interregional
Project No. : INT/83/005/C/01/42
Project Title : Energy Sector Management Assistance Program

				ACTUAL	ESTIMATED	
		S/M	TOTAL	S/M CY85	S/M	CY86
100.0	Cost Sharing					
101.0	CIDA/Forestry Uganda	17	178,102	17 178,102	-	-
102.0	CIDA/Kenya Solar Water Heating	11	80,965	- -	11	80,965
103.0	CIDA/Kenya Power Sector	102	717,896	- -	102	717,896
104.0	CIDA/Colombia - Energy Strategy	33	228,620	- -	33	228,620
10.10	Personnel					
11.2	Experts	6	43,983	- -	6	43,983
11.4	Consultants	61	487,687	17 178,102	44	309,585
21.0	Acres International	96	673,913	- -	96	673,913
11.99	Component Total	163	1,205,583	17 178,102	146	1,027,481
199.0	Total Cost Sharing	163	1,205,583	17 178,102	146	1,027,481

esmap-budg, p.2
RPOwen/vmh
June 12, 1986

ATTACHMENT I

ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAM (ESMAP)

KENYA: Power Sector Master Plan Study

1. The principle objective of the study is to assist the government of Kenya to develop a least cost power development plan for 1985-2005, including integrating and updating existing data regarding power supply and consumption in Kenya, and assessing the potential of Kenya's indigenous generation resources. The study should provide an indispensable tool for efficient utilization of domestic and imported power resources.

2. The study will be mainly concerned with, (a) resource assessment and (b) load forecast and generation planning. In assessing resources, the study will examine Kenya's hydro power generation resources, including preliminary design and hydrological and typographical surveys of the most promising sites, including sites at Grand Falls on the Tana River. In examining hydro power potential, the study will take into account irrigation and other water uses. Geothermal potential will be assessed through review of the geothermal exploration and development program at Olkaria and other prospective areas. As regards thermal power, the study will carry out site and infrastructure investigations for a 2 x 60 MW coal fired station at Mombasa, including comparative evaluation with gas turbine generation. The study will also examine the potential for additional imports of power from Tanzania and Uganda. Transmission planning will be undertaken in conjunction with projected load growth and proposed generation expansion. As regards load forecast and generation planning, the study will prepare forecasts for energy and power (1985-2005) for each major consumer category and for each region, including sensitivity analysis against variations in economic growth rates. On the basis of agreed economic planning criteria, the study will then recommend the least cost power generation sequence over that period.

3. The study will be carried out by Acres International Limited, a Canadian consulting firm and is expected to take about 12 months to complete. The costs of the negotiated contract with Acres and the application of funds to ESMAP costs are as follows:

Study Budget	US$	SW
Consultants costs in Kenya	80,706	42.5
Consultants costs in Canada	318,522	199.5
Travel, subsistance and reimbursables	143,009	
Sub-contractors	87,707	
Subtotal	629,944	
Contingencies	43,969	
Contract maximum	673,913	
Application of funds to ESMAP costs	43,983	
TOTAL	717,896	242.0

RKhonsary:bj
2/18/86

ESMAP: KENYA - SOLAR WATER HEATING (SWH) PROJECT

The main objective of the SWH mission to Kenya was to produce a pre-investment study to assist the Government of Kenya in obtaining external funding to introduce SWH systems in sectors where they can be utilized cost effectively and to the advantage of the national economy. The specific objectives of the mission were to: (a) determine the present (1985) and projected (1990) market size for technically and economically viable SWH applications and (b) prepare an action plan for systematic development of SWH technology focusing on issues such as: production, installation, maintenance and design capabilities; policy environment; and technical assistance needs.

The budget allocated for this ESMAP activity was $80,000. The estimated cost for completing this activity is $79,220, of which $71,980 have been spent (as of 3/5/86) and the remainder ($7,240) is estimated to be spent through the issuance of the blue cover ESMAP report.

ATTACHMENT III

COLOMBIA - Energy Strategy

PURPOSE OF ACTIVITY

1. This activity is aimed at formulating, jointly with Colombian counterparts, an energy strategy consistent with the country's macroeconomic objective. The Government of Colombia requested in July 1985 technical assistance to this end. As a first step, a preliminary Bank mission visited Colombia in September, 1985, to discuss: (i) the main issues to be addressed; (ii) a tentative timetable; and (iii) Colombian staff participation in this activity. At the end of that mission, agreement was reached on each of the above points, including specific studies required to define an energy strategy.

2. As a next step, the Colombian Energy team prepared draft terms of reference (TOR) for the specific tasks already identified; subsequently, these TOR were discussed with the Bank's team in February, 1986. It is expected that implementation of the agreed work program will start in April 1986.

3. The energy strategy paper is expected to be completed in the last quarter of 1986. It is intended to serve as a basis for future decisions regarding the country's energy sector in the macroeconomic context i.e., energy related investments energy pricing, energy export strategy, institutional framework, etc.

4. The total cost of this activity will be about US$400,000 broken down as follows: 1/

	Fee/Salary	Subsistence	Travel	Total
Consultants	320,000	8,000	5,000	323,000
ESMAP Staff	34,000	8,000	10,000	52,000
Support Staff	6,000	-	-	6,000
Contingency	11,000	4,000	4,000	19,000
	361,000	20,000	19,000	400,000

1/ The work will be divided in two phases. Funds for first phase - US$230,000 have been disbursed.

UNITED NATIONS DEVELOPMENT PROGRAMME

PROJECT REVISION

INT/83/005

Country: Interregional

Project Title: Energy Sector Management Assistance Programme

Project Number: INT/83/E05/G/73/42

The purpose of this budget revision is to:

(a)	reflect actual CY85 expenditures	$2,847,681
(b)	rephase into CY86, CY85 savings	$4,228
(c)	Denmark - Core Contribution for 1986	$115,607
(d)	Switzerland - Core Contribution for 1986	$537,634
(e)	UK - Department of Trade and Industry (Core Contribution for 1986)	$373,134
(f)	Sweden - Guinea Bissau (map of Bissau)	$63,694
(g)	Netherlands - Cote d'ivoire (Biomass utilization)	$67,000
(h)	Netherlands - Ethiopia (Cooking Efficiency Program)	$15,000
(i)	Netherlands - Kenya (Peri-Urban Fuelwood Study)	$57,143

Agreed on behalf of the Executing Agency
Anthony A. Churchill
Director, Energy Department
The World Bank

6/12/86
Date

Agreed on behalf of UNDP Energy Office
A. Bruce Harland,
Deputy Assistant Administrator and
Director, Energy Office
United Nations Development Programme

12 June 1986
Date

REVPROJ, p.18
RPO:vmh/6-10-86

PROJECT BUDGET COVERING THE UNDP CONTRIBUTION
(In U.S. Dollars)

Country : Interregional
Project No. : INT/83/E05/G/73/42
Project Title: Energy Sector Management Assistance Program

		Total	Actuals CY84	Actuals CY85	Estimated CY86
100.0	Cost-sharing				
102.0	IBRD	700,000	700,000	-	-
103.0	Netherlands-Ethiopia (Cooking Efficiency Program)	169,118	60,000	94,118	15,000
104.0	Netherlands-Kenya (Peri-Urban Fuelwood Study)	238,143	-	181,000	57,143
105.0	Denmark - Core Contribution for 1986	206,516	-	90,909	115,607
106.0	Switzerland - Core Contribution for 1986	1,807,255	-	1,056,621	750,634
107.0	Sweden - Guinea Bissau (Map of Bissau)	63,694	-	-	63,694
108.0	Netherlands - Cote d'Ivoire (Biomass Utilization)	67,000	-	-	67,000
109.0	UK - Department of Trade and Industry (Core Contribution for 1986)	373,134	-	-	373,134
199.0	Total Cost Sharing	3,624,860	760,000	1,422,648	1,442,212

NB: All cost-sharing contributions have been received by the UNDP Energy Account.

REVPROJ, p7
RPO/vmh/6-11-86

INT/80/009

FINAL

Country: INTERREGIONAL

Project Title: Energy Sector Assessments

Project Number: INT/80/E09/G/73/42

This budget revision reflects final expenditures under the Energy Account financing for this project.

Agreed on behalf of the Executing Agency
Anthony A. Churchill
Director, Energy Department
The World Bank

6/12/86
Date

Agreed on behalf of UNDP Energy Office
A. Bruce Harland
Deputy Assistant Administrator and
Director, Energy Office
United Nations Development Programme

12 June 1986
Date

REVPROJ, p.22
RPOwen/vmh/6-5-86

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

Country : Interregional
Number : INT/80/E09/G/73/42
Title : Energy Sector Assessments Programme

					ACTUALS		ACTUALS		ACTUALS		ACTUALS
			S/M	TOTAL	S/M	CY81	S/M	CY82	S/M	CY83	S/M	CY84
10		Personnel										
	11.1	Adviser	39.5	178,050	12.0	67,941	12.0	39,904	11.0	46,013	4.5	24,192
	11.2	Adviser	38.2	163,332	6.0	27,992	12.0	39,904	12.0	51,130	8.2	44,306
	11.3	Adviser	34.6	148,192	-	-	12.0	39,904	12.0	51,130	10.6	57,158
	11.4	Adviser	36.0	155,316	-	-	12.0	39,904	12.0	51,130	12.0	64,282
	11.6	Adviser	24.8	107,846	-	-	6.0	20,137	12.0	51,130	6.8	36,579
	11.7	Adviser	27.4	122,132	-	-	6.0	20,137	12.0	51,130	9.4	50,865
	11.8	Adviser	6.2	33,231	-	-	-	-	-	-	6.2	33,231
	11.9	Adviser	0.1	536	-	-	-	-	-	-	0.1	536
	11.5	Consultants	120.5	1,436,113	18.0	350,523	41.5	485,524	48.0	472,092	13.0	127,974
	11.9	Sub Total	327.3	2,344,748	36.0	446,456	101.5	685,414	119.0	773,755	70.8	439,123
	13	Administration*	-	959,739	-	118,642	-	235,970	-	486,367	-	118,760
	15	Travel	-	76,006	-	11,486	-	12,340	-	32,130	-	20,050
	16	Mission Costs	-	14,418	-	-	-	4,806	-	9,612	-	-
	19	Sub Total	-	1,050,163	-	130,128	-	253,116	-	528,109	-	138,810
40		Equipment										
	42	Non-Expendable Equip.	-	33,374	-	914	-	1,280	-	31,005	-	175
	49	Sub Total	-	33,374	-	914	-	1,280	-	31,005	-	175
50		Miscellany										
	52	Reports	-	-	-	-	-	-	-	-	-	-
	53	Sundry	-	18,246	-	1,005	-	14,593	-	724	-	1,924
	59	Sub Total	-	18,246	-	1,005	-	14,593	-	724	-	1,924
99		Project Total	327.3	3,446,531	36.0	578,503	101.5	954,403	119.0	1,333,593	70.8	580,032

*Administration's costs 456 S/M for researchers.

REVPROJ, p.5, April 30, 1986
RPOwen:vmh

FORM NO. 27 - OCR
(3/82)

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PAGE 1 OF 1

OFFICIAL DEPT/DIV ABBREVIATION: EGYS1

MESSAGE NUMBER

TEST NUMBER (FOR CASHIER'S USE ONLY)

START HERE

TO MR K. JECHOUTEK, INTBAFRAD, BANGKOK, THAILAND. RE: YOURTEL JUNE 5. FIELD TRIP NOT HIGH PRIORITY, BUT ON SUNDAY JUNE 15 IT COULD BE INTERESTING FOR MISSION TO VISIT FOR EXAMPLE THE NEA/RFD CHARCOAL PRODUCTION CENTER AT SARABURI ABOUT TWO HOURS DRIVE NORTHEAST OF BANGKOK, AND AT THE SAME TIME THE NEARBY RFD TREE NURSERY AND OTHER ENERGY-RELATED MATTERS. I ESTIMATE THAT ABOUT 3-4 PERSONS WOULD AVAIL THEMSELVES OF SUCH A POSSIBILITY. REGARDS, MASOOD AHMED, ACTING DIVISION CHIEF, ENERGY STRATEGY AND PREINVESTMENT DIVISION I, INTBAFRAD.

END OF TEXT

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CLASS OF SERVICE: Telex

TELEX NO.: ~~82817~~

DATE: 6/5/86

SUBJECT: ESMAP Thailand Field Trip

DRAFTED BY: MAhmed:hm

EXTENSION: 73996

CLEARANCES AND COPY DISTRIBUTION:

cc: Mr. Hume (EGY).

AUTHORIZED BY (Name and Signature): Masood Ahmed, Acting Chief, EGYS1

DEPARTMENT: Energy

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THE WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT(83/005

DATE: June 3, 1986

TO: Distribution

FROM: Ian M. Hume, Assistant Director, EGYPS

SUBJECT: ESMAP: THAILAND - Country Program Review Mission
Terms of Reference

1. You should arrive in Bangkok by June 11, 1986, for a stay of about eight days to participate in the above mission which I will be leading. In close collaboration with Thai Government officials and the staff of RMB, and in liaison with Messrs. Kaji and Ikram who will be in Bangkok at the same time, the objectives of the mission are to review the scope of ongoing and planned ESMAP work and to design the framework for the coordination of Thai Government and Bank interaction on the implementation of this work. To this end, the mission will carry out the following tasks:

(a) Carry out mid-mission reviews for the two ESMAP rural energy preinvestment missions that will be in Thailand at the same time, led by Messrs. Grut and Terrado.

(b) Discuss the scope and timing of the proposed study on the impact of lower and uncertain oil prices and obtain the information necessary to prepare a detailed issues paper for this study upon return to Washington; as you know 30 SW of Bank resources have been allocated for this task under the FY87 ESW budget.

(c) Discuss the nature and scope of the assistance being requested under ESMAP by RTG on the issue of energy sector restructuring and privatization; in this regard, our objective should be to ensure a comprehensive and free exchange of views with the various officials and agencies involved in this topic so as to be able to determine whether and how best the Bank, through ESMAP, could assist the Government in developing a strategy on this important issue; therefore, upon our return to headquarters, we should prepare an issues paper which will be used as a basis for deciding upon the scope of subsequent Bank involvement on this topic.

(d) Discuss and agree upon the specific arrangements that would be put into place for the monitoring and coordination of the various ESMAP activities now underway or planned for Thailand; this should include the possibility of setting up interagency working groups for special topics or studies, or an interministerial steering committee to periodically review the progress of the ESMAP program as a whole.

2. In carrying out this work, the mission's main counterpart agencies will be the NESDB and the NEA. At the NESDB, the mission will meet initially with Dr. Phisit Pakkasem, Deputy Secretary General, and with the members of his staff. At NEA, the mission will meet with Dr. Prapath Premmani, Secretary General, and his staff. As appropriate, the mission may also meet with Minister Sulee and other senior policy-makers concerned with energy sector issues in Thailand. The mission will also meet with the senior management of energy sector agencies to discuss their views on the issues of restructuring and sector priorities. Staff of the Resident Mission in Bangkok may join the mission for some of these meetings. We will also contact the office of the UNDP resident representative to brief them on the status and prospects for ESMAP work in the country and to explore the possibilities for UNDP IPF funding of part of this work.

3. The nature of the mission requires that we work closely together in carrying out the above tasks. However, Mr. Aleem will have a special focus on the preparatory work for the oil price impact study and will be responsible for preparing an initial draft of the issues paper for this study upon return to headquarters. Similarly, Mr. Flannery will focus his efforts on the topic of restructuring and will be responsible for the production of the issues paper on this topic upon return to headquarters. Mr. Daffern will support the mission on the oil and gas issues, and will, in particular, follow-up on the exploration promotion assistance requested by the Government. Although, I plan to depart from Bangkok on June 19, 1986, you may be required to stay on for up to another week to complete various aspects of the work; the necessity and duration of such an extension will be decided in the field.

4. Upon our return to Washington, we will produce a back-to-office report on our findings. This will be followed by the two detailed issues papers on the oil price impact study and the prospects for energy sector restructuring, referred to above.

Distribution:

Messrs. Sadove, Ahmed, Daffern, Aleem (EGY); Flannery (IND).

cw and cc: Messrs. Ikram (AEA); Sood (INDRE).

cc: Messrs. Dherse (UPSRO); Kaji, Kikuchi, Lav (AEA);
Blaxall, Nayyar, Albouy (AEPEN);
Bourcier, Montfort, Saunders, McCarthy, de Capitani,
Grut, Terrado (EGY).

MAhmed:hm

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IAT/83/005

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KINGSTONJA 0829 2/6/86

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WASHINGTON DC
USA

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ESMAP FOLLOW-UP MISSION SCHEDULED APRIL PLS INFORM ON
DELAY, STATUS AND EXPECTED DATE ARRIVAL.
MCSWEENEY

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2245 UNDEVPRO JA

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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

June 2, 1986

Drs. R. R. Smit
Head of East Asian Countries Section
Development Cooperation - Asia Department
Ministry of Foreign Affairs
The Hague
THE NETHERLANDS

Subject: INDONESIA - ESMAP Activities

Dear Drs. Smit:

I am writing to follow up on my letter of May 29, 1986, which was hand-carried to you by Mr. Pieper of your staff. Herein, we offer the tentative activity initiation schedule for the ESMAP activities in Indonesia that you will be co-financing as well as a proposed disbursement schedule for supporting them.

The activities, their initiation and completion dates, and estimated costs are as follows:

	Activity	Initiation Completion/ Dates	Cost (US$)
1)	Brick/tile/lime	July 1986 Mission January 1987 Final Report	150,000
2)	Gasifier marketing study	September 1986 Mission December 1986 Final Report	40,000
3)	Household energy	October 1986 Start-up Work June 1988 Final Report	470,000
4)	Electrotechnical standards	October 1986 Mission March 1987 Final Report	35,000
5)	Industrial woodwaste	Under Review	120,000
		TOTAL	815,000

Activity initiation briefs have been forwarded for the first three projects. Terms of reference were provided for the electrotechnical standards study and the woodfuel activity initiation brief is being revised within the Bank.

Eight hundred and fifteen thousand dollars ($815,000) will be required to co-finance these activities during 1986, 1987 and 1988. Given the start-up and completion dates for each project, I would suggest the folowing disbursement pattern:

Tranche	Amount (US$)	Disbursement Date
(1)	150,000	Already disbursed
(2)	365,000	By August 15, 1986
(3)	125,000	March 1, 1987
(4)	125,000	September 1, 1987
(5)	50,000	January 1, 1988

We would appreciate it if you could remit the second tranche at your earliest convenience to the UNDP Energy Account. For each remittance, please specify the name of the country, the titles of the activities covered and the sub-total for each activity. A proposed division of each tranche into sub-totals is enclosed.

This letter has been copied to Mr. A. Hamburger, Ministry of Development Cooperation, because of his interest in this matter. If you have any questions with regard to the timing or disbursement scheduling of any of the activities, please contact me or call Mr. Willem Floor at (202) 477-5425 for assistance. In the near future, we will forward you the remaining activity initiation briefs and a list of potential consultants.

Thank you very much for your continued support of ESMAP. We are looking forward to carrying out this interesting range of projects.

Sincerely yours,

Bernard Montfort
Division Chief
Energy Strategy and
Preinvestment Division I
Energy Department

Enclosure

cc: Mr. A. Hamburger, Energy Aid Coordinator
Messrs. Floor, van der Plas, Freuh (EGY)

Ms. Owen (EGY)

DETAILED DISBURSEMENT SCHEDULE

Tranche	Date	Activities	Amounts
(1)	Already disbursed	Brick/tile/lime	150,000
(2)	By August 15, 1986	Gasifier marketing study	40,000
		Household energy strategy	170,000
		Electrotechnical study	35,000
		Industrial wood-waste	120,000
		Sub-total	365,000
(3)	March 1, 1987	Household energy strategy	125,000
(4)	September 1, 1987	Household energy strategy	125,000
(5)	January 1, 1988	Household energy strategy	50,000
		TOTAL	815,000

FORM NO. 27 - OCR
(3/82)

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PAGE 1 OF 2

OFFICIAL DEPT/DIV ABBREVIATION: EGYPS

MESSAGE NUMBER

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TO MR. JECHOUTEK, INTBAFRAD, BANGKOK, THAILAND. RE: FORTHCOMING ESMAP MISSION. (AAA) MANY THANKS YOUR EFFORTS TO SET UP TENTATIVE PROGRAM FOR FORTHCOMING ESMAP MISSION. IN ADDITION TO MESSRS. SADOVE, AHMED, AND MYSELF, THE MISSION WILL ALSO INCLUDE ERIC DAFFERN, IRFAN ALEEM (EGYS1, TO FOCUS ON OIL PRICE IMPACT STUDY) AND DENNIS FLANNERY (INDRE, TO ASSIST ON RESTRUCTURING ISSUES). WE PLAN TO ARRIVE ON JUNE 11, EXCEPT FOR MESSRS. SADOVE AND DAFFERN, WHO WILL ARRIVE JUNE 12. ACCORDINGLY, IT WOULD BE USEFUL TO RESERVE JUNE 12 FOR DISCUSSIONS WITH QUILL HERMANS AND YOURSELF AND TO SCHEDULE THE MEETINGS WITH KHUN PRAPATH AND DR. PHISIT ON FRIDAY JUNE 13. (BBB) IN ADDITION TO THE SCHEDULED MEETINGS, IT WOULD BE USEFUL TO MEET WITH THE FOLLOWING: KHUN KASAME (BANGCHAK/TORC/EGAT); DR. CHAO (EGAT/PTT); DR. TONGCHAT (PTT); KHUN SIWAWONG (DMR); KHUN SOPHON (BANGCHAK); AND KHUN MANAS OR KHUN NIBHAT (MOF). (CCC) ADDITIONAL MEETINGS FOR INDIVIDUAL MISSION MEMBERS CAN BE ARRANGED ON ARRIVAL BUT ERIC DAFFERN WOULD LIKE TO MEET WITH KHUN PALA, KHUN SIRIN AND KHUN VISET OF PTT. THESE MEETINGS COULD BE ARRANGED AT THE SAME TIME AS THE ONES SCHEDULED FOR TDRI AND

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CLASS OF SERVICE: Telex TELEX NO.: 82817 DATE: 060286

SUBJECT: Thailand ESMAP Mission

DRAFTED BY: MAhmed:hm

EXTENSION: 73996

CLEARANCES AND COPY DISTRIBUTION:
cc: Sadove, Ahmed, Daffern, Aleem (EGY); Flannery (IND); Lav (AEASE).

AUTHORIZED BY (Name and Signature): Ian Hume, Assistant Dir., EGYPS

DEPARTMENT: Energy

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(3/82)

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PAGE 2 OF 2

OFFICIAL DEPT/DIV ABBREVIATION: EGYPS

MESSAGE NUMBER

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CHULALONGKORN UNIVERSITY, IN WHICH MR. DAFFERN NEED NOT PARTICIPATE. THANKS FOR YOUR EFFORTS. REGARDS, IAN HUME, INTBAFRAD.

END OF TEXT

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CLASS OF SERVICE: Telex

TELEX NO.: 82817

DATE: 6/2/86

SUBJECT: Thailand ESMAP Mission

DRAFTED BY: MAhmed:bm

EXTENSION: 73996

CLEARANCES AND COPY DISTRIBUTION:

cc: Messrs. Sadove, Ahmed, Daffern, Aleem (EGY); Flannery (IND); Lav (AEASE).

AUTHORIZED BY (Name and Signature): Ian Hume, Assistant Dir., EGYPS

DEPARTMENT: Energy

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INT/83/005

June 2, 1986

Mr. Masood Ahmed, EGYS1

Subject: Review of papers by E. L. Hyman: Potential for their application to household energy strategy work

Masood,

not attached

1. As requested, I have looked at all three papers and which are attached. Two of them ((1) "Opportunites and constraints for organizations to help sustain tropical forest resources"; and (2) "Demand for woodfuels by households in the province of Ilocos Norte, Phillipines") are fairly conventional and pedestrian. They are written from the perspective of an energy planner and there is nothing new or surprising.

2. The third paper - "A linear programming model for analyzing economic, social and environmental impacts of woodfuels policy alternatives in the Phillipines" - is however interesting. It formalises the idea that there are a number of alternatives open to close the gap between the supply and demand for woodfuels and a mixture of policy options needs to be devised. In a sense, the paper is devising a household energy strategy. There are a number of policy options and a mixture of these is recommended to maximize a given set of objectives (including economic growth, employment and income distribution) subject to certain constraints. The model itself is badly described and comes over as rather mechanistic and data intensive. However, I have some sympathy with the author as he is really describing his approach to an audience of management scientists who are likely to be more interested in the linear programming (LP) approach rather than its implications. At the same, the basic idea has some relevance for our work in EGYS1 as described below.

3. From our point of view, I think it would be impractical to carry out such a detailed LP exercise before recommending a household energy strategy. However, the idea that, given resource and other constraints, there are trade offs between policy options and an optimal policy mix may exist, deserves recognition. Solving the woodfuel problem usually requires more than just introducing efficient woodstoves and charcoal kilns. There are other options including reforestation, agroforestry, substitution by other fuels, etc. which could be followed up at the same time as improved stoves and kilns are introduced. Using a simple LP or, in its absence, a crude assessment of trade offs should permit us to make a much more explicit statement about the intensity with which each policy option should be pursued. In essence, such an approach

would allow us to arrive at a "least cost" plan for meeting future household energy needs. (In principle, the approach would be similar to a least cost expansion plan for a power utility.) Following this approach would give household energy strategy work a little bit more rigour and reduce its current wishy washy image.

4. I would recommend trying a simple form of the LP approach for one of our planned household energy strategy studies to assess its usefulness.

Kind regards,

Irfan Aleem

Attachment

cc: Messrs. Floor, Taylor (EGY)

IAleem:afs

FORM NO. 27 - OCR
(3/82)

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PAGE 1 OF 1

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UNDEVPRO

ABIDJAN, COTE D'IVOIRE

FOR DIAWARA, ASST. RESREP. THANKS UR MISC 1342 RE INTERPRETER FOR BARTONE FOR JUNE 2, 3 AND 4. BARTONE IS NOW IN ABIDJAN STAYING HILTON HOTEL. PLEASE KINDLY INFORM BARTONE THAT IF HE NEEDS INTERPRETER YOU ARE AUTHORIZED TO RECRUIT LOCAL INTERPRETER AND CHARGE RESOURCE RECOVERY PROJECT GLO/80/004 BUDGET LINE 17 UP TO TOTAL OF US DOLLARS 900. PLEASE IOV IBRD REFERENCE GLO/80/004, J-09259, REGARDS, QUICKE, ACTING CHIEF, WUDAT AND K.H. LAU, CHIEF, TRUST FUNDS DIVISION, LOAN DEPARTMENT, INTBAFRAD.

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CLASS OF SERVICE: TELEX

TELEX NO. 964 ~~2~~ 23639

DATE: 06/02/86

SUBJECT: GLO 80/004

DRAFTED BY: Quicke/Retiro/lth

EXTENSION: 69409

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cc: Mr. Bryan, WUD
Mr. Arlosoroff, WUD

AUTHORIZED BY (Name and Signature): Kah Hie Lau

DEPARTMENT: Loan

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CPH/1986.05.29/JMM/HAC/10180E

WORLD BANK
WASHINGTON, USA
ENERGY DEPARTMENT
ATT: MR. ANWAR MALIK

DEAR SIR,

RE: ENERGY MANAGEMENT AND CONSERVATION PROJECT, BANGLADESH

REFERRING TO OUR RECENT DISCUSSIONS IN COPENHAGEN ON THE ENERGY MANAGEMENT AND CONSERVATION PROJECT IN BANGLADESH, WE HEREBY CONFIRM OUR SINCERE INTEREST IN THIS PROJECT.

AS TO FINANCING OF OUR PARTICIPATION, WE WOULD LIKE TO DRAW YOUR ATTENTION TO THE NEWLY SIGNED CO-FINANCING AGREEMENT BETWEEN THE BANK AND DANIDA. AS PART OF THIS AGREEMENT, DANIDA HAS MADE 600.000 USD AVAILABLE FOR THE BANK. THIS AMOUNT IS TIED TO USE OF DANISH CONSULTANTS, BUT THE DETAILED SPENDING IS ENTIRELY UP TO THE BANK.

IN ORDER TO SECURE A SMOOTH AND EFFICIENT START-UP OF THE PROJECT IN BANGLADESH, WE RECOMMEND YOU TO SPEND A CERTAIN AMOUNT /APPROX. 30.000-40.000 USD/ FROM THIS POOL FOR FINANCING AN IDENTIFICATION AND PROGRAMMING MISSION TO BANGLADESH FOR ONE OR TWO OF OUR SENIOR ENERGY MANAGEMENT SPECIALISTS.

I LOOK FORWARD TO HEAR YOUR OPINION ON THIS PROJECT.

KIND REGARDS

S.E. ANDREASEN
COWICONSULT
DENMARK

37280A COWI DK

=05301536

ALT RTD FROM:SASI

NNNN

INT/83/005

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

May 29, 1986

Drs. R. R. Smit
Head of the East Asian Countries
Section
Development Cooperation Asia
Department
Ministry of Foreign Affairs
The Hague
The Netherlands

Subject: INDONESIA: ESMAP Activities

Dear Drs. Smit:

In reply to your letter of March 21, 1986 and pursuant to the discussions you and your collaborators had with Mr. Willem Floor of my division on April 22 and 23 last, I hereby send you the relevant information on ESMAP activities in Indonesia that you requested.

Please find enclosed the Activity Initiation Briefs (AIB) for three of the five activities that were discussed with Mr. van Trigt last April. It was agreed that we would send the (draft) AIBs, as well as the tentative time table for activity initiation. Each of the AIBs also includes a budget, as well as a tentative list of consultants whom we intend to hire for the implementation of these activities. A draft terms of reference is included for the Electrotechnical Standard Study. The Woodfuel Potential Study is being reviewed and revised within the Bank.

A tentative schedule for activity initiation as well as a suggested disbursement program will follow shortly by letter.

If you have any questions with regard to the AIBs, please do not hesitate to call me or Mr. Willem Floor at (202) 477-5425 for further clarification.

With regard to the diesel rehabilitation project, discussions have taken place between Mr. van Trigt and Messrs. Thakor (Regional Energy division) and Gulstone (ESMAP). They will be communicated to you in the near future.

Sincerely yours,

sd/-

Bernard Montfort
Division Chief
Energy Strategy and
Preinvestment Division I
Energy Department

cc: Messrs. Floor, van der Plas (EGYS1)

Ms. Owen (EGYS1)

JLeitmann:afs

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File Title	Barcode No.
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June 27, 1986	Letter	

Correspondents / Participants
To: B. Kendall, Commission of the European Communities
From: Ian Hume, Assistant Director, Energy Department

Subject / Title
Transfer of Final Tranche of EEC's Contribution to the Joint UNDP/World Bank Energy Assessment Programme

Exception(s)
Financial Information iv

Additional Comments

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Kim Brenner-Delp	Nov. 3, 2022

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INP163/0007

DATE: May 27, 1986

TO: Messrs. Ernesto N. Terrado, Biomass Specialist, EGYPA; and Robert van der Plas, Researcher, EGYS1

FROM: Masood Ahmed, Deputy Division Chief, EGYS1

SUBJECT: ESMAP: Thailand - Preinvestment Activity
Accelerated Dissemination of Improved Stoves and Kilns
Terms of Reference

1. You should arrive in Bangkok on or about June 4, 1986, along with the ITDG consultant team to conduct field work related to the above ESMAP Activity, as requested by the National Energy Administration (NEA).

2. Mr. Terrado, who shall stay for about two weeks, shall have the following responsibilities as Mission Leader:

a) ensure that all members of the consultant team are provided detailed terms of reference for the activity as a whole and for each person's particular area of work;

b) interview candidates and make the final selection of two local experts for the short-term posts of Marketing Associate and Rural Sociologist/Socioeconomist. He should then provide these persons with detailed terms of reference for their part of the work and ensure that there is good initial interfacing between them and the ITDG and government teams;

c) arrange initial meetings between mission members and government officials, and working level staff, the Bank Resident Mission Office, and representatives of international agencies in Bangkok involved in rural energy/forestry projects (UNDP, FAO, USAID, etc.);

d) finalize the program of work for the mission, covering both field work and report writing phases. The specific outputs required of each person or group and the timetables for their sub-mission should be agreed upon with all concerned;

e) lead the mission in initial visits to stoves manufacturers, charcoal producers, government stoves/kiln research and promotion centers, public markets, and villages where field trials of improved stoves and kilns were done in the past.

3. Mr. Robert van der Plas shall stay for about four (4) weeks in Thailand and shall have the following responsibilities:

a) assist the Mission Leader in all of the above activities and assume supervisory duties over the consultant team and the field work program after Mr. Terrado leaves Thailand. During the latter period, he should ensure effective information flow and feedbacks between the consultants and government staff by holding periodic discussion meetings and following-up on requests for materials from Thai agencies. At the conclusion of the mission, he should arrange for a wrap-up meeting with NEA and RFD officials and staff to appraise them of the preliminary results of the mission;

b) as a technical specialist, actively contribute to the task of selecting existing stove models and charcoal-making techniques suitable for immediate dissemination, and identifying specific areas for continued R&D that should be carried out in parallel with the marketing program;

c) ensure that all Bank administrative requirements related to contracting and compensating external and Thai consultants are met in an appropriate and timely manner.

4. Upon return to Washington, you will submit a combined Back-to-Office Report summarizing the results of the mission. You should then follow-up on ITDG's post-mission report writing task and ensure that a complete draft report is submitted for internal Bank review by early August.

cw and cc: Messrs. Kikuchi (AEA); Saunders (EGYPA).

cc: Messrs. Ikram, Lav (AEA);
Blaxall, Nayyar, Albouy, Wadsworth (AEP);
Hermans, Jechoutek (RMIT);
Hume, Sadove, Dosik, McCarthy, de Capitani, Aleem, Floor, Taylor, Grut (o/r), (EGY).

Ms. Mott (AEPA2).

RvanderPlas:my

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

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INT/83/005-

June 24, 1986

Dr. J. Berteling
Ministerie van Buitenlandse Zaken
Bezuidenhoutseweg 67
Postbus 20061
2500 EB den Haag
The Netherlands

Subject: Netherland's Government Contribution to the Core Resourses of the Joint UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP)

Dear Dr. Berteling:

On behalf of the ESMAP Programme, may I thank you most sincerely for the offer of the Netherland's government to contribute 1,500,000 Dutch guilders to our programme resourses.

The conditions proposed in paragraph two of your letter are generally acceptable to us. However, on point no.1, we would greatly appreciate your allowing some degree of minor flexibility on the $US100,000 limit for individual ESMAP allocations. It is our experience that where activities may cost only marginally more than that figure it would be most cost effective to cover a small deficit under the Netherlands contribution rather than enter into a time-consuming search for an additional funding source. In such cases we would, of course, seek the approval of the Dutch authorities before proceeding to a commitment.

Regarding the UNDP/World Bank response to the recommendations voiced by Dutch and other participants at the Paris meeting, let me assure you that action is already being taken on issues raised. With particular reference to ESMAP's close cooperation with regular World Bank programmes, I am pleased to note that on-going activities in Indonesia (Power Generation Efficiency Programme), Ethiopia (Briquetting of Crop Residues, Surplus Bagasse Potential), Niger (Household Energy Substitutes), Colombia (Energy Strategy) and Senegal (Industrial Energy Conservation) are examples of successful continuity between ESMAP and the Bank activities. In the light of the Paris meeting, efforts to ensure such complementarity will continue.

If the points mentioned above are agreeable to you, please consider that ESMAP agrees to the conditions of the Netherlands' government and invites you to effect a transfer of the core resourses to the UNDP Energy

Account at the earliest convenience. In so doing please address your correspondence to the UNDP as principal, with copies to this office.

With repeated thanks for your continued support,

Yours sincerely,

Ian Hume
Assistant Director
Energy Department

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT/83/005

DATE: May 23, 1986

TO: Ms. Jacqueline Shanberge and Mr. Eloor, EGYS1

FROM: Bernard Montfort, Chief, EGYS1

SUBJECT: ESMAP: SENEGAL - Industrial Energy Conservation Project/
Solar Water Heating Project/ Household Energy Strategy
NIGER - UNSO Energy Conservation and Substitution Study
PARIS - Meeting with TRANS ENERG re Senegal Project
NORWAY - Desertification Control Workshop
Terms of Reference

Paris

1. Ms. Shanberge, you should arrive in Paris on May 26, 1986 to meet with Messrs. Malherbe and Paillat of TRANS ENERG to discuss the Senegal - Industrial Energy Conservation Project. Specifically, you should discuss the progress of the field work, the production of reports and administrative matters including schedule of payments and submission of an itemized statement of expense.

Niger

2. Both of you should arrive in Niamey on May 27, 1986 to meet with the team of consultants for the UNSO project and to clear with the Government the Green Cover of the Improved Stoves Project Mid-Term Report. While in Niger you should itemize a budget for the Niger Improved Stoves Project and agree upon a revised budget for the UNSO project. In addition, you should brief Mr. Sanger, World Bank Resident Representative and Mr. Cavalli, UNDP Resident Representative on the two Niger projects.

Senegal

3. On June 3, 1986 you should proceed to Dakar where you will meet with the TRANS ENERG/AFME and ADS consultants for the Industrial Energy Conservation Project and with the Government. Specifically, you should: (a) review the inception report of the Institutional Environment Study Expert to determine if his work is now acceptable; (b) develop and discuss the work program of the ADS consultants and the coordination of the work of all participants in the project with Mr. Cisse, Director of Energy, MDIA, the NOEC Advisor, Mr. Verlet and with the consultants; (c) obtain a signature from Mr. Salif N'Diaye approving the Budget Revision C; (d) discuss with Mr. N'Diaye possible second year UNDP financing for the project.

4. With regard to the Solar Water Heater Study you will try and obtain Government clearance for the green cover.

5. Finally, you will discuss with the Government the draft AIB for the Household Energy Strategy (HES), get Government clearance of the AIB, as well as agree upon implementation arrangements of the HES.

6. You should brief Mr. Kaps, World Bank Resident Representative, and Mr. N'Diaye UNDP Resident Representative on the Senegal projects.

Norway

7. Mr. Floor, you should proceed to Oslo to participate in the Workshop on desertification control and renewable resource management in West Africa.

Washington, D.C.

8. On your return to Washington you will write a back-to-office report.

cw & cc: Mr. Landell-Mills (WA2)
Ms. Martinez (WA2)

cc: Messrs. Bauer/Menezes (WAPEG)
Mulckhuyse (INDRE)
Ahmed (EGY)
Kaps, Resident Representative, Senegal
Sanger, Resident Representative, Niger

JShanberge:my

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

F338

INT|63|005

DATE: May 22, 1986

TO: Distribution

FROM: Bernard Montfort, Chief, EGYS1

EXT: 74844/5

SUBJECT: NIGER: Improved Stoves Project
Mid-Term Progress Report

1. Please find attached for your review and clearance the draft final version of the Mid-Term Progress Report for the Niger: Improved Stoves Project. This is the same report, with minor revisions, that was distributed informally by Mr. Floor last week to obtain comments. The report discusses the progress made during the first year of the project and what will be done during the second year. It is based on information provided in nine consultant reports coupled with the observations gathered and conclusions made during the January 1986 supervision mission (Messrs. Montfort and Floor and Ms. Shanberge) and the April 1986 mission (Ms. Shanberge).

2. Please provide comments to Ms. Shanberge (Ext. 75535, D637) or Mr. Floor (Ext. 75425, D631) by c.o.b. Friday, June 6, 1986.

Attachment

cc.: Mesdames Martinez, Bendokat (WA1); Buchanan (EGY)

Messrs. Hinkle (WA1); Bauer/Menezes (WAPEG); Hume, Terrado, de Capitani, Ahmed, Floor (EGY)

JShanberge:lt

NIGER: IMPROVED STOVES PROJECT

MID-TERM PROGRESS REPORT

May, 1986

ACRONYMS

AFN	Association des Femmes Nigériennes
AFVP	Association Francaise de Volontaires du Progrès
CEG	Centre de l'Education Générale
CFA	Comité Foyer Amélioré
CILSS	Comité Interetat de la Lutte contre la Secheresse Sahélienne
CNSS	Caisse de Securité Sociale
CWS	Church World Service
DE/MME	Direction de l'Energie du Ministère des Mines et de l'Energie
ESMAP	Energy Sector Management Assistance Program
FAO	Food and Agriculture Organization
FED	Fonds Européen de Dévelopement
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
INDRAP	Institut de Recherches et d'application Pédagogique
NGO	Non-governmental organization
ONERSOL	Office National de l'Energie Solaire
PAM	Programme Alimentaire Mondial
PMI	Protection Maternelle, Infantile
PNUD	Programme des Nations-Unies pour le Développement
SONITEXTIL	Société Nigerienne de Textiles
SONORA	Société Nigerienne de Commercialisation de l'Arachide
UNDP	United Nations Development Program

CURRENCY

1 US$ = 350 F.CFA

TABLE OF CONTENTS

TABLES

GRAPHS

ANNEXES

MAP

I. OVERVIEW

Summary

1.1 With over 25,000 improved metal stoves sold in the first year, 125% of the total sales to have been achieved by the full two year project, the Niger Improved Stoves Project (referred to in the text as the Project) is considered highly successful. Its success is due to four main factors: (a) good stove design and production system (including quality control) and (b) price setting which meet the needs of producers and consumers and provides real, accruing benefits; (c) extensive sensitization, promotion and publicity campaigns; (d) use of traditional and modern disseminating and marketing channels. In collaboration with the Ministry of Mines and Energy/Direction of Energy (MME/DE) 1/ the Project was initiated in February 1985. The Project is funded jointly by the United Nations Development Program (UNDP), Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), and the Dutch Government and implemented by the Joint UNDP/World Bank Energy Sector Management Assistance (ESMAP) and the GTZ Special Energy Program. It resulted from recommendations made in the Niger Energy Assessment Report 2/ to address the problem of overexploitation of the forest cover to reverse the trend of declining soil fertility and increasing desertification. The main goal of the

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1/ For the Project, MME/DE is the principle contact in the Nigerien Government. MME/DE is thus responsible for providing Nigerien counterparts and coordinating any Government activities concerning the Project.

2/ Niger: Issues and Options In the Energy Sector, March 1984 (Report No. 4642 - NIR).

project is to reduce wood consumption by implementing an economically viable, self-sustaining program to produce and market improved woodstoves.3/ This report discusses the progress made during the first year (February 1985-March 1986) and what will be done during the second year. Nine consultants' reports have been produced thus far (refer to Annex 3 for a listing of the titles) upon which the information in this report is based.

Background

1.2 To carry out its objective of large scale production and dissemination of improved stoves in urban centers, the Niger Improved Stoves Project developed its plan of action based on the work with improved stoves that had already been initiated by Church World Service (CWS) and the AFVP/Bois de Feu. CWS, a non-governmental organization, has been working mostly in the rural zones in Niger since the early 1970's teaching the Nigeriens how to construct Albarka stoves (an improved three stone stove made of clay and straw). The work of CWS thus set in motion the concept of increasing woodburning efficiency by improving the stoves being used. The project of the AFVP/Bois de Feu, financed by the Fond European de Developement (FED), began in 1983 with the introduction of the improved metal stove model, the Mai Sauki. The work has covered mostly training of metalsmiths and disseminating stoves in the villages of Agadez, Zinder, Tessaoua and Tchadaoua and now in

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3/ Refer to Annex 1 for the Project's objectives for each quarterly time period and to Annex 2 for details on project staffing.

cooperation with the Project, includes training the metalsmiths in Niamey. Because the AFVP/Bois de Feu project already initiated adoption of a specific improved metal stove model, the Project decided to carry out its work with the same model and in collaboration with AFVP divided the work such that AFVP continued with training metalsmiths and the Project took on the responsibility of the sensitization, promotion and publicity campaigns.

II. FIRST YEAR PROGRESS

Stove Design and Production

2.1 Stove design, production, and quality control provide an improved stove that meets the needs of producers and consumers.

Design

2.2 The Project continued with the work initiated by AFVP by using an improved metal stove, the Mai Sauki, that the AFVP adapted from the Burkina improved metal stove, the Ouaga Metallique. The Ouaga stove is made of new steel, is welded, is painted to prevent corrosion and has a cooking efficiency of 35% giving 50% woodfuel savings. In comparison, the efficiency level was preserved and the following modifications were made to produce the Mai Sauki for Niger:

(a) cost is reduced by using scrap metal instead of new metal and the stove is not painted with anti-corrosive paint, paint being excessively expensive;

(b) Nigerien metalsmith skills are better utilized by having the stoves folded and riveted instead of welded (discussed in more detail in section on Production);

(c) stability is improved with three changes - bending out a ridge on the bottom which prevents the stove from entering into the sand, bending out a ridge on the top to make the stove more solid and prevent the sides from bending in during use, and

setting the kettle supports at a diagonal instead of horizontal to let the kettle sit more deeply and thus more solidly in the stove;

(d) transport of the stoves is made easier by increasing the size of the handles.

2.3 For details on stove design and testing of the Mai Sauki, refer to Annex 4.

Production

2.4 The production component of the project can be broken down into two main parts: training of metalsmiths in Niamey, Maradi and Tahoua and actual production. Since 1983, the actual production in Niamey has been concentrated in Bokoki market in cooperation with the work of AFVP/Bois de Feu. The production system was first developed in Niamey and has successfully carried on operations, independent of the Project. Such an effective system has been able to work because it was based on existing production elements in place in the Boukoki market, the center of Niamey's artisinal production. These elements included: standardized kettles,4/ artisans trained in working with metal, a known method of making traditional metal stoves using riveting folding instead of welding, and the availability of scrap metal supplies.

4/ With the size of the stove corresponding to the size of the kettle, it is important that the latter is standardized so that efficiency of the stove can be maximized.

2.5 Training. One of the Project's goals is to train all stove-making metalsmiths such that projected demand for the new improved stoves is met in the future and production of the less efficient traditional metal stove (foyer malgache) is greatly reduced.5/ Since 1984, the AFVP has been training metalsmiths in Niamey to change over from producing traditional metal stoves to producing Mai Sauki improved metal stoves. (Refer to Annex 5 for details on the Project's collaboration with AFVP as well as other organizations). Similar training of metalsmiths in Tahoua and Maradi began in July 1985 and is being supervised by the Project. The AFVP training sessions train ten people at a time and last five days. Training is available to any metalsmith who is interested. Once a metalsmith finishes his training, he receives a template for the different sizes of Mai Sauki. Average production per metalsmith is estimated at about 8 to 12 stoves per day. Table 2.1 shows the number of persons trained and the potential daily production capability broken down by the Project's first year quarterly periods for Niamey, Maradi and Tahoua.

5/ It will be difficult to completely eliminate the production and use of traditional metal stoves as there are some applications that cannot be met by the current model of the improved metal stove.

Table 2.1: TOTAL METALSMITHS TRAINED AND POTENTIAL DAILY PRODUCTION CAPABILITY a/

	Quarters			
	1st	2nd b/	3rd b/	4th b/
Niamey				
Number Trained	36	51	55	61
Total Production Capacity p.d. c/	300-350	400-450	430-480	480-600
Maradi				
Number Trained	--	10	10	10
Total Production Capacity p.d. c/	--	80-120	80-120	80-120
Tahoua				
Number Trained	--	5	5	5
Total Production Capacity p.d. c/	--	50-70	50-70	50-70
TOTAL				
Number Trained	36	66	70	76
Total Production Capacity p.d. c/	300-350	530-640	560-670	610-790

a/ Because present demand for stoves is being met and demand in the foreseeable future can be handled by the metalsmiths already trained, in February 1986, training was temporarily halted.

b/ Cumulative.

c/ A range is given because the total number of metalsmiths who work each day and the number of stoves produced varies depending on the demand.

2.6 Actual Production. Though total potential production, is estimated at 610-790 stoves per day, actual production is much less (in total about 60 stoves per day). The difference in potential and actual is due to the fact that present demand is too low to warrant maintaining potential production levels. Because the metalsmiths only produce upon request of the Project or the intermediaries (they cannot afford to main-

tain a large stock) 6/ their actual production figures approximate the number of stoves sold.

2.7 The urban household market is estimated at about 114,000 households or 228,000 stoves (with two stoves per household) based on the 1977 population census and estimated growth figures for urban population.7/ Assuming that the stove lifetime is two years, the replacement production level would be about 114,000 stove per year. To satisfy this potential of demand, the presently trained metalsmiths, who could potentially operate at a total daily production level of 610 to 790 stoves, would have to work full time for about 145 days to 190 days per year or only spend one-half of their time producing stoves. What seems like an overabundance of trained metalsmiths is actually not an overabundance but a number that has been established to meet projected future demand and allow for less than full time employment and for flexibility in devoting time to making metal implements other than stoves.

2.8 In Niamey, stoves are produced either for sale with the Project as the intermediary or for sale outside the Project directly by the metalsmiths or market vendors. For details refer to the section on Dissemination and Marketing. From August 1984 to July 1985, prior to the commencement of the project, AFVP, CWS and AFN sold 960 stoves. From March 1985 through March 1986, the total number of stoves sold in Niamey,

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6/ Metalsmiths hold from 5-15 stoves in an average stock.

7/ Total population for 1985 is estimated at 6,388,000 and urban population is about 14 percent of total population. Household figures are based on 8 persons per household.

Tahoua and Maradi was 23,265 (refer to Table 2.2 for actual production breakdown and Graph 1.1 for total production in each city). In addition, 2,087 stoves were sold by AFVP in Agadez (755), Arlit (350), Zinder (682), and Tessaoua (300). This brings the total to 25,352 improved metal stoves sold in Niger, 96% sold during the one year period of March 1985 to March 1986. This actual production/sales is equivalent to approximately 9% of the total potential nation demand for improved metal stoves.

Graph 1.1: TOTAL STOVE PRODUCTION PER CITY (NIAMEY, TAHOUA AND MARADI)

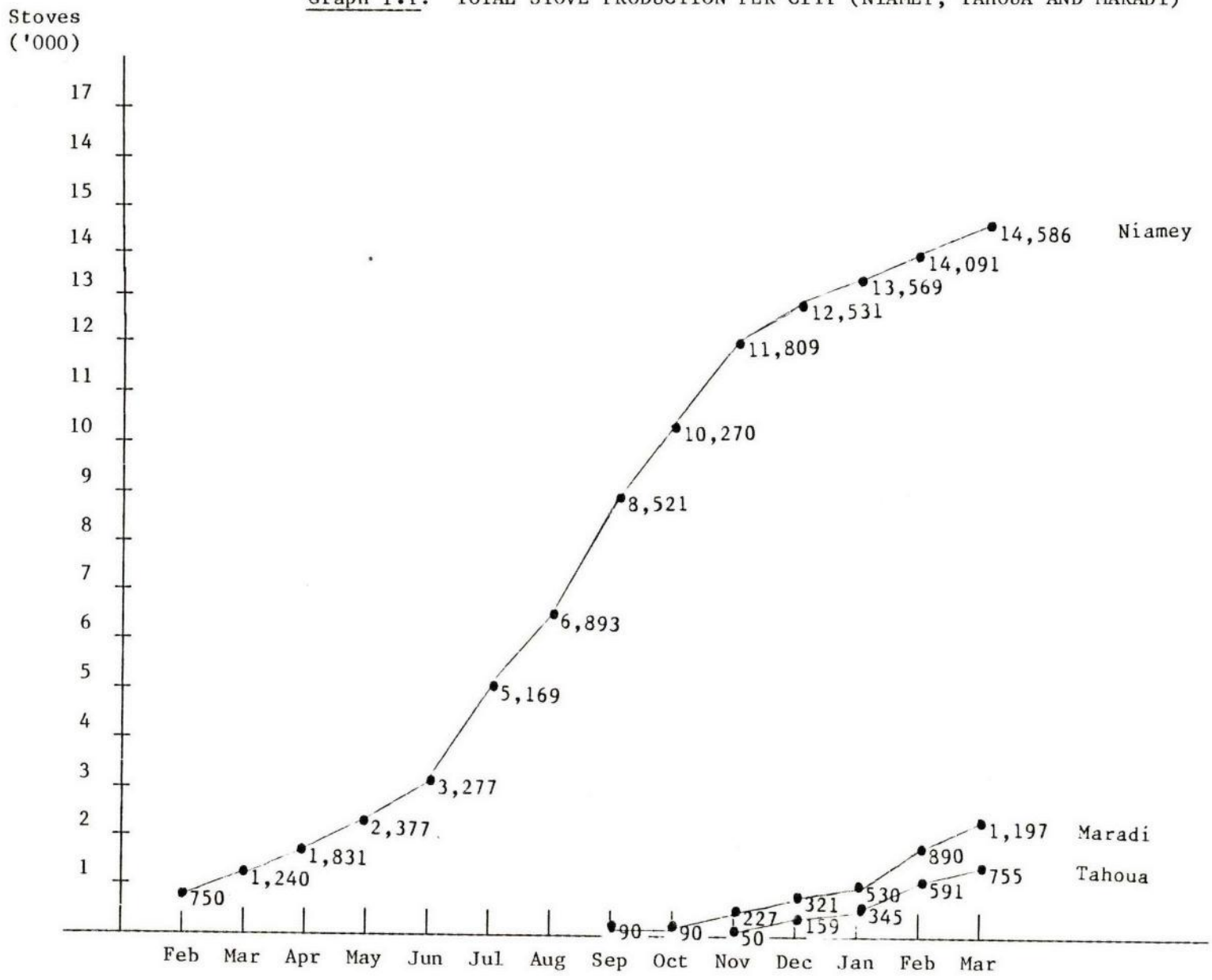


Table 2.2: ACTUAL PRODUCTION/SALES

Quarter	Produced For & Sold with Project as Intermediary					Produced For & Sold Outside of Project Supervision				TOTAL
	Niamey	Tahoua	Maradi	Other Depts.	Total	Bokoki Niamey	Market Tahoua	Metalsmiths Maradi	Total	
Before Project a/	960	-	-	-	960	500	-	-	50	1,460
First Quarter										
March	240	-	-	-	240		-	-		
April	341	-	-	-	341		-	-		
May	296	-	-	-	296		-	-		
Subtotal	877	-	-	-	877		-	-	1,500	5,869
						1,500				
Second Quarter										
June	650	-	-	-	650		-	-		
July	1,642	-	-	1,200 b/	2,842		-	-		
August	804	-	-	-		920	-	-	920	
Subtotal	3,096		-	1,200		2,420 c/	-	-	2,420 c/	
		350			2,100					3,792
Third Quarter										
September	946		-	-		682	-	90	772	
October	1,149	17	-	-	1,166	600	-	-	600	1,766
November	889	42	91	-	1,022	650	8	46	704	1,726
Subtotal	2,984	409 d/	91	-	7,780 d/	1,932	8	136	2,076	9,856
Fourth Quarter										
December	234	104	63	-	401	488	5	31	524	925
January	144	181	59	-	384	894	5	150	1,049	1,433
February	49	225	262	-	536	473	21	98	592	1,128
Subtotal	427	510	384	-	1,321	1,855	31	279	2,165	3,486
Fifth Quarter										
March	100	158	209	4,200 e/	467	395	6	98	499	966
Subtotal	100	158	209	4,200	467	395	6	98	499	966
Total	8,444	1,077	684	5,400	15,605	7,102	45	513	7,660	23,265

a/ Stoves sold from August 1984 to January 1985 by AFVP (530), CWS (110) and AFN (120) and from February 1985 to July 1985 by AFVP (200).

b/ Stoves purchased by the Direction des Forêt et de la Faune for the Tree Celebration special event which took place on August 3-9, 1985 (see Annex 6 for details).

c/ Subtotal for 1st and 2nd quarters combined.

d/ Subtotal for 2nd and 3rd quarters combined.

e/ Stoves bought by World Food Program (Programme Alimentaire Mondial, PAM) which distributed 600 free stoves to each department of Niamey for PMI, dispensaries, hospitals, schools and social centers.

Quality Control

2.9 To ensure that a level of quality in stove production is maintained, three measures are being implemented: template dissemination, making templates of new steel, and inspecting finished stoves. Templates for the various size stoves are distributed to metalsmiths once they completed training. This ensures standardization as well as quality. The accuracy of the templates was improved by changing from templates made of recycled sheet metal to ones made of new sheet metal. This in turn increased the quality of the stoves produced. In Niamey in the beginning of July 1985, a third measure was implemented to ensure quality. One of the metalsmiths was appointed stove inspector and was thus responsible for checking each Mai Sauki produced by a trained metalsmith. If the stove is approved, the inspector puts a special stamp, "Foyer Verifié," on the stove that can be recognized by both sellers and buyers. This second step prevents non-trained metalsmiths from copying and producing Mai Sauki without the training and passing off poorly-made stoves under the backing of the improved stove's reputation.

Stove Pricing

2.10 The sales prices for the various sizes of the improved stoves have been set at levels which are attractive for both parties concerned, such that: (a) the metalsmiths about double their benefits if they produce and sell the improved metal stoves instead of the traditional, efficient metal stoves, and (b) a family can amortize its investments for two improved stoves (sizes 2 and 3) 8/ in about 30 days. In considering the margin of profit for the metalsmiths, the principle component for which to account is the cost of production. For illustrative purposes, the production cost for the stove sizes 2 and 3 are used. The production costs shown in Table 2.3 are estimated at 490-520 F.CFA for the size 2 stove and 500-530 F.CFA for the Size 3 stove.

8/ The Project found both in its Preliminary Study (by analyzing kettle sales) and in the Follow-up Survey of the Sensitization Program (looking at both sales and use of stoves), that the most commonly used stoves are the sizes 2 and 3. The following results were obtained:

Source	Stove Size									
	1	1½	2	3	4	5	6	7	8	9
At sales point (%)	6.2	-	31.4	33.2	11.2	7.6	3.2	3.8	1.8	1.6
Follow-up Survey	5.5	0.2	34.1	35.9	11.8	6.7	1.9	2.5	0.6	0.8

Table 2.3: STOVE PRODUCTION COSTS
(FOR STOVE SIZES 2 & 3)

Stove Part	Cost	
	Size 2	Size 3
	(F.CFA)	(F.CFA)
Main Body	290	300
Grate	60	60
Supports and Handles	40	40
Labor	100-130 a/	100-130 a/
Total	490-520	500-530

a/ The metalsmiths pay an assistant about 1,000 F.CFA per day. A trained, experienced assistant produces about 8 stoves per day therefore the labor cost on average equals 125 F.CFA per stove. The assistant is paid less if he is less experienced; therefore a range is given.

In comparison, the production costs (including labor costs) for a traditional metal stove of similar size is about 250. That same traditional stove on the market is priced between 250 and 450 F.CFA.9/ Thus, to be competitive with two traditional metal stoves, the Mai Sauki equivalent (sizes 2 and 3) were priced at 650 and 750 F.CFA respectively. This allows the metalsmiths to about double their benefits when producing the improved stoves.

2.11 The price of the improved stoves was established not only for the benefits to the metalsmiths but also such that the amortization period for the investment made by the consumers would be short and approximate that of the traditional metal stoves. A comparison of the amortization period of the traditional metal stove and the Mai Sauki,

9/ Unlike the prices of the improved stoves, the price for the traditional metal stove is not fixed.

considering the costs of the stoves and daily wood consumption and using the three stone fire as the base, shows a very favorable amortization period for the Mai Sauki (Table 2.4). Because the Mai Sauki stoves are twice as efficient as the traditional stoves, the amortization period for the investment of two Mai Sauki stoves is about the same as that of the two traditional stoves even though the Mai Sauki stoves cost two times as much. In addition, the amortization period of the Mai Sauki stoves is less than 5% of the life of the stoves whereas the amortization period for the traditional metal stoves is about 10% of the total stoves' lifetime.

Table 2.4: PERIOD OF AMORTIZATION OF DIFFERENT STOVE TYPES

Stove Type	Cost or Time
Three Stone Fire	
Cost of 2 Stoves	Free
Wood Cost (0% economy) a/	112 F.CFA
Traditional Metal Stove	
Cost of 2 Stoves	700 F.CFA
Wood Cost (18% economy) a/	92 F.CFA
Expected Stove Life b/	1 year
Amortization Period	35 days
Mai Sauki Improved Metal Stove	
Cost of 2 Stoves (Numbers 2 & 3)	1,400 F.CFA
Wood Cost (35% economy) a/ b/	73 F.CFA
Expected Stove Life b/	2 years
Amortization Period	36 days

a/ It is assumed that: per capita consumption is 1 kg/person/day, 8 persons are in each household, two stoves are used in each household, and the cost of wood is 14 F.CFA. (See Annex 7 for basis of estimate of cost of wood).

b/ Estimated average lifetime, however, no studies have been completed yet, to verify these figures.

c/ 35% is based on actual performance.

2.12 From the analysis completed (summarized above), the sales price for each size stove was set at increments of 100. The stove sizes and their respective sales price is presented in Table 2.5.

Table 2.5: MAI SAUKI STOVE PRICES

Stove		Corresponding Kettle Size a/	
Stove Size b/	Sales Price	Diameter	Volume c/
	(F.CFA)	(cm)	(l)
No. 1	550	18.0	1.85
No. 2	650	21.5	3.03
No. 3	750	25.0	4.92
No. 4	850	27.5	6.54
No. 5	950	29.5	8.20
No. 6	1,050	31.0	9.80
No. 7	1,150	32.5	10.80
No. 8	1,250	34.5	13.10
No. 9 d/	-	-	-
No. 10	1,450	37.5	17.85

a/ Measurements taken by Project, April 1986.
b/ The stove sizes correspond to the kettle sizes; the latter were established prior to stove production.
c/ Equals volume when kettle is two-thirds full.
d/ There is no size 9 because there is not a corresponding size 9 kettle.

Sensitization, Promotion and Publicity

2.13 Three main marketing techniques were used to educate the public on the importance of using improved stoves (on the micro and macro-economic level): sensitization, promotion and publicity.

Sensitization and Promotion

2.14 The main objectives of the sensitization and promotion component of the project have been to ensure that the stove being introduced into Nigerien households is properly suited for Nigerien cooking habits and that it is well understood both in its potential

benefits and its proper use. To design an appropriate program to introduce the stoves, the Project carried out a "Preliminary Study." To inform the Nigeriens on the benefits and correct use of the improved stove, the Project has performed cooking demonstrations, circulated within the quarters with drummers and an audio-speaker on a bus, provided brochures on proper stove utilization with each stove sold, and participated in special programs and ceremonies.

2.15 Preliminary Study. This study was executed by the Project with the assistance of three promotors provided by the Ministry of Planning (Ministère du Plan/Animation Urbaine). The main goal of this study was to develop the methods by which the Project could best approach the Nigeriens to introduce the Mai Sauki improved stoves on a large scale basis. The introduction would be facilitated by understanding the traditional methods of food preparation and the viewpoint of Nigeriens on household energy concerns (fuelwood - difficulty in obtaining wood, high prices; stoves - efficiencies, cost, dependability, problems, use with other cooking utensils especially kettles). At the beginning of the project work, 77 representative households in five quarters were chosen to test the improved stoves and be closely monitored over a two month period. The following procedure was followed for the study: the project members demonstrated cooking with the improved stoves, distributed the stoves, observed utilization during a first visit to the households, recorded the most frequent problems with the stoves, sought and set up

the means to market the stoves and set up stocks in the quarter, and conducted the first and second questionaires. These surveys covered the following topics and came to the following conclusions:

(a) family characteristics - number in family (75% of families included from 2 to 10 persons), ethnic background (the three principal backgrounds represented are - Djerma 50.6%, Peulh 19.9% and Haoussa 19.5%), daily money allowance for food and fuel (500 and 1000 F.CFA were most common);

(b) preparation of food - what and when (the most common dishes prepared are sauce and pate/rice for dinner and super);

(c) kettles - number and size (a family of 2 to 10 persons most frequently uses a size 2 kettle for sauce with a size 3 kettle for pate/rice; for families larger than 10 persons the size 3 is used most frequently for the sauce and sizes 5 to 7 for the pate/rice) (Table 2.6);

Table 2.6: KETTLES USED IN NAIMEY

Pan Size	%
1	8.25
1.5	7.45
2	38.00
3	35.27
4	5.32
5	4.52
6	0.27
7	0.53
8	0.27

Source: Etude du Secteur Economique Bois au Niger, IDA/FAC/CCCE, 1985.

(d) stoves - number and size (families of 2 to 10 persons most often use two stoves, one for sauce and the other for rice), where used (during the dry season most cooking is done outdoors, during the rainy season the cooking is moved into the house or in a shed);

(e) fuel - type used (mostly fuelwood), amount and cost per day (a family of 1 to 8 persons uses one fagot costing 100 F.CFA which lasts for 1 to 2 days; for families larger than 8 persons that same amount lasts only one day), and savings with improved stove (consumption has been halved in some households);

The results of this preliminary study were used to develop the sensitization and promotion program and a publicity campaign. They also helped the Project modify its plan to distribute stoves with no down payment, with the consumer paying upon satisfaction of savings

achieved. Instead the study showed a significant enough interest in the stoves to begin at the outset selling the stoves at full cost.

2.16 Promotion and Sensitization Campaign. With the assistance of the AFN, the Project carried out this campaign first in Niamey from June 1985 until the first of December 1985. Subsequently, a similar campaign was launched first in Tahoua on October 1, 1985 and then in Maradi in mid-October 1985. In Niamey, the sensitization program covered all 45 quarters, 9 military camps (where soldiers and their families live), as well as the PMI (Protection Maternelle et Infantile), the latter done during Ramadan because food was still being prepared for the children who are not obliged to fast. Two teams, each with two promotors (one of the four from AFN), carried out the campaign in Niamey. The measures that the team followed included: contacting the quarter's authorities especially the quarter's AFN President; gaining the attention of the people in the quarter by driving through the quarter and making announcements with a loud speaker attached to a VW Bus and by having drummers play; demonstrating cooking using both traditional metal stoves and improved stoves to compare the two and show and explain the advantages of the improved stoves; selling stoves; and establishing a sales point in the quarter at the home of the Quarter's AFN President.

2.17 Once the sensitization campaign method was established in Niamey, the campaign was expanded to Tahoua and Maradi. Demonstrations in Tahoua were carried out on a communal level and in the subdistricts (arrondissements) of Tahoua. The method used in Tahoua was the same method as that used in Niamey. The Maradi campaign also utilized the same method as in Niamey and worked on the same quarter basis with the

cooperation of the Prefecture and the "Maison des Jeunes." The work in Tahoua and Maradi was covered through coordination with Nigerien organizations and with Peace Corps volunteers. (For details, see Annex 4 - Collaboration with Other Organizations).

Publicity

2.18 To compliment the work being carried out in production and sensitization/promotion, a national publicity campaign was undertaken in May 1985, about four months after the commencement of the project, and became operational in June 1985. The main objectives of the publicity campaign have been to publicize on a national basis: (a) the existence of the improved metal stove, the Mai Sauki, and of the work of the Improved Stove Project and of the improved three stone stove, the Albarka, and of the work of CWS; (b) the proper use of the two types of improved stoves; and (c) the potential benefits that could be enjoyed resulting from the use of improved stoves both for individuals and for the country as a whole. The publicity campaign uses all available media ranging from written communication (i.e., pamphlets distributed at sale points, sale of clothing material imprinted with the project's improved-stove logo, and publication of articles and advertisements in the local press) to non-written communication (i.e., spots aired on the radio and television, popular songs written about the improved stoves and sung at gatherings and on the radio). To ensure that the message being projected is clear and that there is immediate identification with the improved stove work, the Project chose one logo for all publicity (one woman with two improved metal stoves and two pieces of wood for each stove).10/

10/ One logo was used for everything except the material for which the already existing CWS logo was maintained.

2.19 The following specific measures were taken through written means to meet the publicity campaign objectives:

(a) to advise the women on correct utilization of the stoves, illustrations and explanations were published in pamphlets (distributed at sales points and in conjunction with the promotion efforts) and in the papers and magazines. These publications show through diagrams and written explanations that for best results with the stoves, the women need to use the correct number kettle with the corresponding stove, clean the grate before each meal preparation to improve air circulation thereby improving the efficiency, and reduce the wood consumption to two pieces instead of four (the latter amount is usually used in traditional metal stoves). The local press to which articles are submitted include: "Le Sahel," "Sahel Dimanche," and the "Kazel;"

(b) to provide general information to the public, the project has followed through on a number of actions including:

(i) printing and selling at cost circular stickers (with the motif of a Nigerien woman cooking with an improved stove);

(ii) putting up posters in each quarter prior to a promotion campaign to announce the location and time of the presentation;

(iii) in conjunction with the promotion campaign described above, circulating in the quarters in vehicles which are painted colorfully and detailed with the project's motif - a woman preparing a meal with the improved stoves with the project's slogan, "Avec mon foyer amélioré j'économise du bois - Pour un Niger Vert," (With my improved stove I save fuelwood - For a Green Niger);

(iv) posting easily noticed signs (which say - "MAI SAUKI, EN VENTE ICI" meaning Mai Sauki On Sale Here) at all the sales points to draw the public's attention to the availability of the improved stove;

(v) working with SONITEXTIL to imprint cloth with a picture of a Nigerien women using improved stoves with the slogan in French, "Avec mon foyer amélioré, j'economise du bois" (With my improved stove, I save fuelwood);

(vi) designing and selling at cost a t-shirt, printed in three versions for the three principle languages spoken (French, Djerma and Haoussa). The slogan: in French - "Avec mon 'MAI SAUKI' j'économise du bois" (With my Mai Sauki I save on wood), in Houssa - "Murhun Zamani abkin

itace," (A modern stove - a friend of trees), and in Djerma - "Zamaani feema tuuri hasaraw ban," (With a modern stove, no more waste of wood);

(vii) producing match boxes with a motif of the Mai Sauki and an accompanying slogan (this step has been delayed due to constraints of the match box factory).

2.20 The project has also employed a number non-written forms of communication for its publicity campaign including:

(a) creating and paying for spots (starring local project staff as 'actors') which are broadcast 1-2 times per week on television covering the same subjects as mentioned in the first paragraph under publicity. One example spot was a cooking demonstration which showed the relative amounts of wood consumed by the improved woodstove and by the traditional metal stove.

(b) creating and showing a film documentary on stoves (both on their utilization and on their production);

(c) engaging a well-known singer to compose a popular song about the Mai Sauki, then recording the song on a tape that could be sold in the market; and

(d) writing and enacting a play on the subject of improved stoves - the advantages of their use and their importance in Niger.

2.21 In addition to the Project's efforts, the Nigerien radio program, Voice of Sahel, broadcasts programs about desertification including sections on improved stoves in Niger.

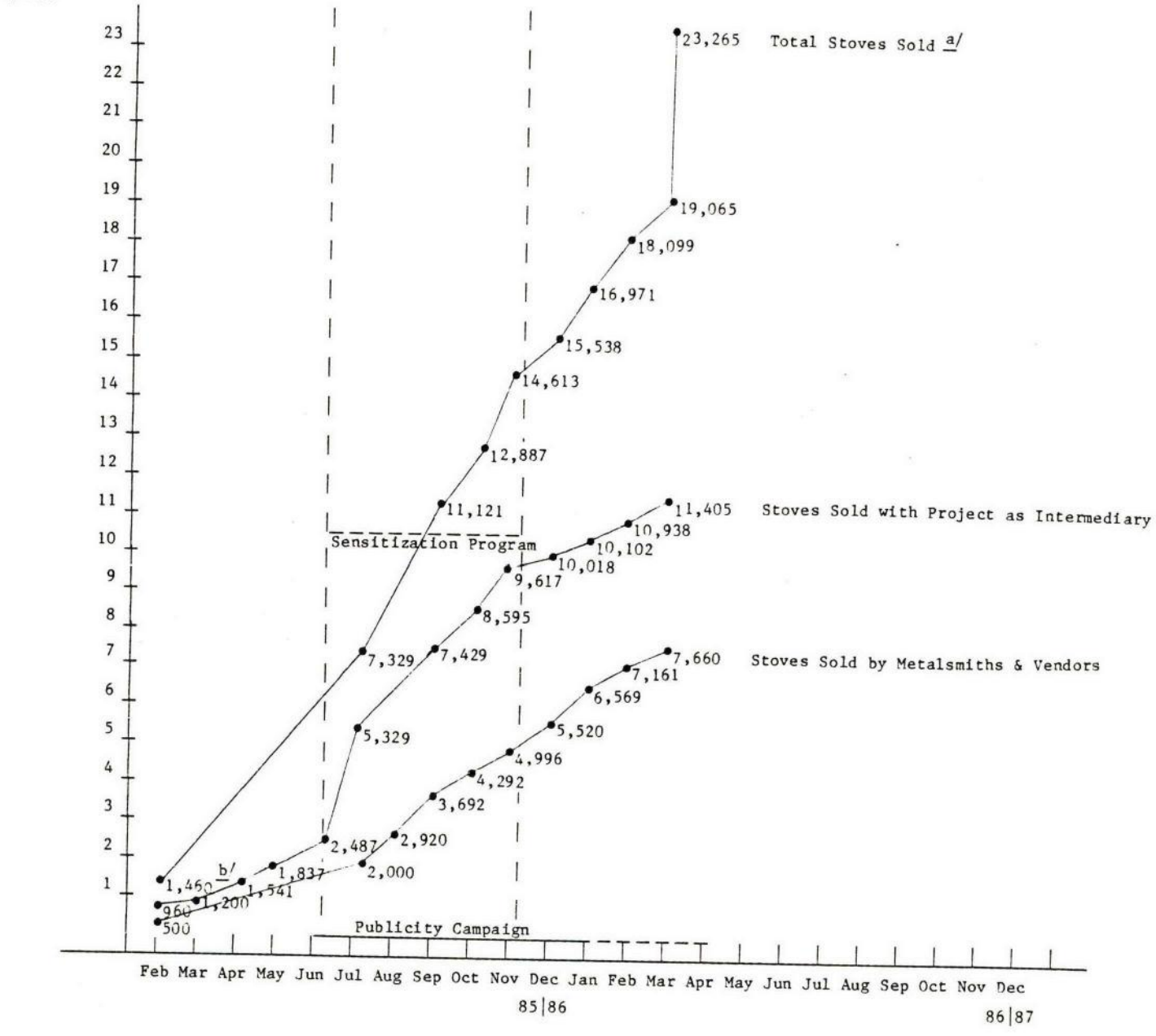
2.22 Special Events. In addition to the formal publicity efforts, the project has also conducted or participated in special events such as the "Open Door Day," the May First Parade, the "Tree Celebration Day," the Day for Nutrition, the Exposition at the Chamber of Commerce and the Silvo-agri-pastural Fair. For a description of each of these events refer to Annex 7. Each of these days allowed the Project to expand its promotion efforts, distribute information, demonstrate the effectiveness of the improved stoves and reach not only the general public but also decision makers in Government, allowing the project to make an even greater impact on improving the woodfuel supply problem.

2.23 The effectivenes of the sensitization/promotion and publicity program is periodically assessed through random surveys carried out in the streets. The first survey was conducted in June, 1985 the second in September 1985 and the third in December 1985 in and around the "petit marche." Both men and women were surveyed (in total 101 and 120 for each of the surveys). It was found that the percentages of people surveyed who had heard of the improved stoves increased from over 75% of those first surveyed to 93% from the second survey and to 99% in the third survey. Of those who had heard of the improved stoves in the first survey, over two thirds had been reached through the sensitization

activities and the other third through the publicity campaign. In the second survey, two thirds had heard by the television and another quarter through word of mouth (from husband/wife, neighbors or family members). The information the people had heard the most was that one could save money and wood when using the improved stove. The other messages noted were (in descending order of being known): rapid cooking, easily cleaned, two pieces of wood are sufficient, the numbers (of stove and kettle) must correspond and the stoves are portable.

2.24 A second illustration of the successful impact of the sensitization/promotion and publicity program is demonstrated by stove sales as shown in Graph 1.2. For the first 6 months of the project, the outreach programs were just being developed. Beginning with their implementation in the sixth month, a dramatic rise in stove sales occurred; the growth in stove sales has continued from the inception of sensitization/promotion and publicity.

Graph 1.2: CUMULATIVE TOTAL STOVES SOLD IN NIAMEY, TAHOUA AND MARADI



a/ Total (23,265) equals stoves sold with project as intermediary (11,405) plus stoves sold by metalsmiths and vendors (7,660) plus stoves sold by AFN in March (4,200).

b/ Stoves sold by AFVP (730), CWS (110) and AFN (120) prior to commencement of the ESMAP/GTZ Project.

Dissemination & Marketing

2.25 The marketing strategy of the project was based on two objectives: (a) penetrate the market as quickly and completely as possible, and (b) establish a marketing mechanism that will become autonomous and self-sustaining. To address these two objectives the Project chose two forms of marketing channels. 11/ For the first objective, sales points were set up at intermediary points including: the homes of the AFN Presidents of each quarter, at the homes of the Chiefs of the quarters and at the project itself. By the end of the second trimester, 30 such sales points had been set up (seven during the first trimester). To meet the second objective, the project is also encouraging sales through traditional marketing structures including: at the metalsmiths, and by venders who already are accustomed to selling the traditional metal stoves. Venders sell the stoves either at stationary sales points (usually in the markets) or by circulating through the city by camel and hand-drawn carts. The operation of the intermediary sales points has continued during the first year but they are already being slowly phased out to encourage sales by the more traditional channels and thus ensure autosufficiency of sales. The increasing importance of sales through traditional channels is illustrated in Graph 1.2 which differentiates sales by the project and sales through traditional channels. By

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11/ The following discussion is for Niamey only. The marketing strategies for Maradi and Tahoua are stil being formulated.

November 1985, project sales have begun to level off while sales through traditional means continues to rise. Total sales for Niamey as well as Tahoua and Maradi are given in Table 2.2 and on Graph 1.2.

Stove Design Research

2.26 To compliment the production, promotion and dissemination work carried out in Niger, technical research was conducted in the Netherlands and Niger by the Woodburning Stove Group (Eindhoven). The work was carried out in Niger with technicians from ONERSOL and from MME/DE. The objectives of the research included: (a) reducing the amount of sheet metal used in stove production to prevent the stove price from increasing due to high sheet metal prices. The amount of sheet metal used could be reduced by either decreasing the height of the stove chamber or the width but done so as not to effect the performance of the stove; (b) designing and testing a Mai Sauki with a chimney to reduce health and comfort problems posed by the stove's smoke emission; (c) developing a stove for small roadside restaurants; and creating a center in Niger for stove research and development. (For details of the work carried out refer to Annex 4).

Mai Sauki Modified

2.27 To address the first objective, different design parameters were tested in the lab and a stove was developed with 15% savings in sheet metal and 10% more savings in woodfuel consumption than the original Mai Sauki design. These lab results were tested in two subsequent surveys carried out in Niamey. These surveys resulted in different conclusions as to the acceptibility of the modified stove.

Further field testing is planned to achieve more definitive results before deciding on for the future, which stove model should be produced and sold.

Mai Sauki with Chimney for Households

2.28 A chimney stove was designed to reduce the problem with smoke. Tests in the laboratory showed that the model designed maintains an efficiency of around 35%, burns long wood sticks and supports the traditional spherical pans. The Project also determined that the chimney stove could be produced from scrap metal using the same method of folding and riveting used on the plain Mai Sauki model and thus could be produced by the same metalsmiths. During the field visit from September to November 1986, the Boukoki blacksmiths were asked to construct the first set of proto-type stoves with a chimney according to the specifications from the laboratory. Two main problems had to be resolved: the construction of the chimney to remove the smoke and the construction of a set of concentric rings to close the gap between pans of different sizes and the stove body. The difficulties with the chimney were solved satisfactorily but, in contrast, the problems with the concentric rings were not. The problem was studied in Eindhoven and drawings of templates were prepared for a second series of proto-type stoves for the project.

Mai Sauki with Chimney for Restaurants

2.29 Because roadside restaurants are highly visible woodfuel consumers, and thus are important for publicity, the Project set out to convert the restaurants to using improved metal stoves. The three most typical restaurants found in Niamey prepare: rice and sauce, grilled meat, and tea. A survey was carried out on 136 of these restaurants and

found that the restaurant's average woodfuel consumption was about 10-20 kg per day. In the time frame of the project, it was not possible to start a design exercise for all three classes of restaurants, therefore, the Project focused on the traditional restaurants. Two stove types were designed and tested in the laboratory. The better design achieved an efficiency of 38% providing fuel savings of 20% over the malgache stove and 30% over the open fire. Because the stove size used in the restaurants surveyed range from 1 to 20 with 95% of those surveyed using sizes 1 to 10, the project decided that the new stove designed was not needed in that the existing Mai Sauki stove sizes could meet 95% of the restaurant needs.

2.30 In addition to the work done for the traditional restaurants, field tests were made on modifications of the grilled meat restaurant stoves. By reducing the height of the grills and placing a door in front to reduce the air flow, the Project found that the efficiency was increased from 5.5% to 12% resulting in woodfuel savings of 55%. Due to lack of staff, no follow-up has as yet been given to this component.

Stove Testing Program

2.31 To establish the efficiency, power output and specific wood consumption of the various stove models, a stove testing program was drawn up by the Stove Technologist. This work plan, set out for the Nigerien counterparts, was for the period October 1985 through April 1986 during which each stove type (Mai Sauki, Mai Sauki Modified, Albarka and Traditional Metal Stove) was tested using two different boiling tests. For each stove size of each type of stove, 8 test runs were carried out (4 for each type of stove test). The results of these tests are

presently being analyzed by ONERSOL technicians and will be presented at a CILSS conference in May 1986.

Stove Technology Training

2.32 A three week training session was conducted by the Stove Technologist for the Nigerien technicians involved with the project. The topics covered included: heat transfer, fluid flow design methodology and test procedures. The objective of the training was to prepare the technicians for the stove testing program described above.

III. SECOND YEAR ACTIVITIES

3.1 To evaluate the effectiveness of the program thus far, and determine the additional areas which should be covered, the following questions were posed by the Project at the end of the Niamey sensitization campaign, the answers to which resulted in the work plan set out for 1986, the second year of the program.

(a) Is a second sensitization campaign needed? If a second campaign should be launched, should an organization other than AFN be used? A corrollary question to be answered is - What groups have been reached through the AFN?

(b) What has the impact been of the use of improved stoves on total woodfuel consumption?

(c) Can a program be developed to produce and disseminate improved metal stoves in rural zones?

(d) What is the optimal Mai Sauki stove design for Nigerien households (considering both household's and producers' interests)?

3.2 To address the questions posed above and achieve the major objectives of the Improved Stoves Project, during the second year, the Project will not only continue with the work in publicity and follow-up that it began in the first year, but will start new activities. (At the end of this chapter, Table 3.1 presents on a flow chart the timing of these activities.) The Project will continue work in the following areas:

(a) in Maradi and Tahoua, continuing with the sensitization campaign and the survey of woodfuel consumption;

(b) carrying out publicity campaigns in parallel with the sensitization campaigns (including airing television spots, putting up posters, distributing stickers and selling imprinted material and t-shirts);

(c) for each quarterly time period of the Project, conducting a survey in the streets to evaluate the effectiveness of the publicity and promotion campaigns; and

(d) participating in "special events."

3.3 The Project has targeted seven main new activities for the second year. One is a second sensitization campaign in Niamey, targeted at men to inform them of the advantages of using the improved stove, primarily of potential woodfuel savings and the necessity to match stove

size to that of the kettle. It is important to have the men informed because they are the ones who are responsible for disbursing funds to purchase both the stoves and the wood for the household. In addition, not only do the men disburse the funds but also, as noted in the Follow-up Survey, of those who actually purchase the stoves, one third are men.

3.4 Planning for the Sensitization Campaign for Men was carried out from January through April, 1986. From May through October, 1986, each quarter in Niamey will have a "soiree" of information and entertainment. The information will be on the advantages of using improved metal stoves. The entertainment includes theatrical performances and the singing of songs both with the subject of Mai Sauki improved metal stoves. Not only will men from the quarter and Project members participate in the soirées, but also the independent stove sellers. These stove merchants will be introduced at the soirées and participants will be alerted as to where the stoves can be bought. This will help reinforce autonomous stove sales and will mark the end of the Project acting as an intermediary in stove sales.

3.5 In parallel with the Sensitization Campaign for Men, the Project will carry out a daily publicity campaign on the radio (May - October, 1986), announcing the soirées and promoting the improved stoves.

3.6 To enlarge the Project's area of concern, work on introducing improved stoves will begin in June, 1986 in the town of Dosso and in small rural villages around Niamey including Tillaberi, Say, Tera, Baleyara and Filingue. The work in these areas will be covered by three European volunteers (one to work with the metalsmiths and two on the

sensitization/promotion campaign). Prior to commencing work, the volunteers will be trained in Niamey during the month of May, 1986.

3.7 In conjunction with the work done in the small villages, the Project will investigate the possibilities of production and dissemination of improved metal stoves in rural zones. In this regard, the following points must be covered: availability of artisans to produce the metal stoves and the ability of rural dwellers to pay for stoves.

3.8 To determine the optimal Mai Sauki design for Nigerien households a survey will be carried out in Tillaberi (not yet touched by the improved stoves program) and in Niamey (covered extensively by the sensitization/promotion and publicity campaigns during the past year) using models of the original design of the Mai Sauki and of the modified Mai Sauki (for details on the differences between the two, refer to the section, "Stove Technology - Mai Sauki Modified"). No distinction will be made as to which came first and thus households will be asked to test both types of stoves and evaluate the performance of each. Based on the outcome of this survey, the Project will determine which model of stove should be used in the continuation of the project.

3.9 After evaluating the laboratory results of the Mai Sauki with Chimney, the Project will carry out field tests of the chimneyed stove model in Nigerien homes to determine whether or not any additional modifications are necessary. Once the results of the field tests are accounted for, if conclusions are favorable, the Project will implement a program to train metalsmiths in Mai Sauki with Chimney stove production and will work on dissemination and use with sellers and households respectively.

3.10 Finally, to evaluate the effectiveness of improved stoves in terms of woodfuel consumption, in October/November, 1986 the Project will carry out a woodfuel consumption survey in about 400 families. This study will follow the same format of a similar survey carried out prior to the commencement of the Project and thus the results of the two will be compared to form the basis of the evaluation of the Project.

Table 3.1: 1986 WORK PLAN

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan
	Survey	Evaluation of Questionnaires	Results										
Campaign													
TN	Publicity Spot												
							Film Documentary						
					Regular Broadcasts -- "Mai Sauki Night"								
apers													
Sahel)	Photo Series			Photo Series									
al Events					May 1st Parade			Tree	Celebration Day				
ion													
am for men	Develop Program				Implement Program								
Research													
ied Mai Sauki							Production & Dissemination						
auki													
h Chimney							Production & Dissemination						
ard Survey					Carry out survey								Report
t Survey on													
ectiveness of													
paigns	Survey							Survey					
Consumption													
vey										Survey	Report		
	Refresher												
ion	Cooking Demonstrations in the Quarters												
	Wood consumption with Mai Sauki (130 Families)												
								Survey		Report			
	Cooking Demonstrations in the Quarters												
ion	Wood Consumption with Mai Sauki												
								Survey		Report			
nteer) and TILLA/OUALLAM/SAY/BALEYARA/TERA/FILINGUE (2 Volunteers)													
f													
rs in Niamey			Volunteer										
etal-smiths				DOSSO									
				Others									
					DOSSO								
							Others						
ion & Sensitization								DOSSO					
									Others				

PROJECT OBJECTIVES

1. The overall objectives of the project as set forth in the Activity Initiation Brief are to:

(a) design two types of improved woodburning stoves - a metal stove and the same model with a chimney, the latter to reduce discomfort and health problems from smoke. Because the chimneyed stove is more expensive, it is targeted for wealthier consumers;

(b) test stove designs for their social acceptability in select households;

(c) establish local production capability by working with existing metalsmith workshops; and

(d) disseminate stoves on a large scale (covering major urban centers starting with Niamey, then Maradi and Tahoua) which includes sensitization of the population, publicity and promotion campaigns and commercialization.

2. These major objectives were broken down into more specific objectives for the preliminary study and each quarter of the first year of the project.

Preliminary Study (4/85-5/85)

3. The main objective of this study was to carry out a survey in five quarters of Niamey to:

(a) become familiar with the culinary and household customs in Niger (including: socio-economic characteristics of households, duration of stay in one place, consumption of wood - amount, cost, frequency of purchase, and number and size of marmites used);

(b) become familiar with the reaction of Nigerien women to using an improved woodstove;

(c) determine the options for commercialization which could be used; and

(d) develop a publicity campaign.

First Quarter (Feb-May, 1985)

4. The work of this first quarter was concentrated on Niamey and was based on the following objectives:

(a) assuring and beginning large-scale production of improved metal stoves made by local metalsmiths. This included: evaluating the market capacity of new sheet metal and verifying the quantity available of recycled sheet metal, and training local metalsmiths;

(b) developing a strategy and carrying out the dissemination of improved woodstoves. This included: preparing and carrying out a promotion and sensitization campaign, preparing and implementing a publicity campaign, and establishing places to sell the stoves; and

(c) planning a technical work program.

Second Quarter (Jun-Aug. 1985)

5. The work of this second quarter was determined by the experience gained during the first quarter and expanded the scope of the project from Niamey to Maradi and Tahoua. The objectives set forth and attained include:

(a) increasing the production capacity in Niamey by training additional metalsmiths;

(b) carrying out the training of metalsmiths in Maradi;

(c) beginning large-scale production of improved woodstoves in Maradi;

(d) initiating the promotion and sensitization campaign in Niamey and Tahoua;

(e) continuing with the publicity campaign;

(f) modifying the Mai Sauki in the laboratory to increase cooking efficiency and decrease the amount of metal used; and

(g) designing and testing in the laboratory a Mai Sauki chimney stove for use in households and small roadside restaurants.

Third Quarter (September-November, 1985)

6. The objectives for this period include:

(a) finishing the sensitization campaign in all the quarters and military camps in Niamey;

(b) continuing the sensitization in Tahoua;

(c) beginning the sensitization campaign in Maradi; and

(d) continuing the publicity campaign in Niamey and Tahoua and begin in Maradi; and

(e) verifying in field, conclusions of laboratory stove tests.

Fourth Quarter (December 1985 - February 1986)

7. The objectives for this quarter include:

(a) carrying out a follow-up survey of the sensitization campaign (the campaign was conducted July 1985 - December 1985) to determine its impact and plan for future campaigns;

(b) developing and preparing the conception of a second sensitization campaign coordinated with a radio publicity campaign;

(c) continuing the sensitization campaign in Tahoua and Maradi;

(d) continuing the publicity campaign in Niamey, Tahoua and Maradi;

(e) introducing improved stoves in small rural villages outside Niamey by conducting cooking demonstrations: and

(f) redesigning the Mai Sauki chimney stove for housenolds.

STAFFING

1. The core staff of the project are three experts: Project Manager, Promotion Expert and Stove Technologist. They are assisted by varying numbers of foreign and local personnel depending on the demands of the project. By quarter, the assisting staff during the first year of the project has been:

(a) First Quarter - (In Niamey) Nigerien counterpart (part-time), one local expert (carrying out surveys and executing sensitization campaign), one promotor, one warehouseman (responsible for input and output on stoves), one chauffeur and one guardian;

(b) Second Quarter - (In Niamey) same staff as first quarter with one promotor added the first of May and two promotors and a second chauffeur added the first of July; 11 Peace Corps Volunteers arrived in July for training to prepare for responsibility in stove dissemination;

(c) Third Quarter - (In Niamey) Nigerien counterpart (full-time), one local expert (same duties as in first quarter), two full-time promotors, two part-time promotors, two chauffeurs, one guardian who also was the warehouseman, and during the time the

Stove Specialist was in Niamey one additional promotor and chauffeur; (In Tahoua) two Peace Corps volunteers and one promotor began work full-time in October; (In Maradi) two Peace Corps Volunteers and one promotor began work full-time in October; (in Diffa, Dakora, Tanout, Agadez), seven Peace Corps Volunteers began work in October; and

(d) Fourth Quarter - (In Niamey) same staff as third quarter with one less chauffeur and promoter (these two were added in the third Quarter for the Stove Technologist). In addition, two technicians of ONERSOL joined the project to carry out series of tests on the Mai Sauki and the "modified" Mai Sauki (in Maradi and Tahoua) same staff as third quarter.

REPORTS PRODUCED FOR PROJECT

1. According to the terms of reference of the Project, nine reports have been produced. Five reports have been submitted jointly by the Project Manager and the Promotion Expert and four reports have been submitted by the Stove Expert.

2. The joint Project Manager/Promotion Expert reports include:

(a) "Etude Preliminaire," June 1985;

(b) "Rapport Trimestriel - 1er. Trimestre 1985 (Fevrier a Mai 1985)," June 23, 1985;

(c) "Rapport Trimestriel - 2ere. Trimestre 1985 (Juin a Aout 1985)," September 9, 1985;

(d) "Rapport Trimestriel - 3eme. Trimestre 1985 (Septembre a Novembre 1985)," December 15, 1985;

(e) "Enquête-suivi sur l'impact de la campagne de sensibilisation effectuée de juillet à décembre 1985," March 1986.

3. The Stove Expert's reports include:

(a) "Performance Tests on the Mau Sauki," June 1985;

(b) "Chimney Stove," July 1985;

(c) "The Design of a Chimney Stove for Restaurants in Niamey", September 1985; and

(d) "Resumé du travail technique - Project Foyer Amelioré," September/November, 1985 (Coauthored with MME technician); and

(e) "Mai Sauki with Chimney (Second Report)," February 1986.

4. The information provided in these reports coupled with the observations gathered and conclusions made during the January 1986 Supervision Mission (mission members: Messrs. Montfort, Floor, and Ms. Shanberge) and the April 1986 mission (Ms. Shanberge) form the basis of this Mid-Term Report.

STOVE DESIGN

1. Three stove designs were studied to meet the needs of different groups of consumers: Mai Sauki (for the general household market), Mai Sauki modified with a chimney for consumers who can afford a more expensive stove that reduces smoke problems, and the Mai Sauki modified with a chimney for small roadside restaurants.

Mai Sauki

2. Tests were conducted on the Mai Sauki to reduce the amount of sheet metal used and to maximize the stove's efficiency. The parameters tested include: (a) gap width between pan and shield, (b) distance between grate and pan bottom, (c) shield height, and (d) grate. The tests performed involved simple water boiling at a constant woodfuel consumption rate with the results expressed in terms of power output and efficiency. The conclusions were as follows:

(a) For gap width between pan and shield. Efficiency is greatly increased by narrowing the gap width, reaching efficiencies of 50%. However, with too small of a gap, the gas flow is reduced to a level at which too little air is available for combustion and a great deal of smoke is produced. A gap width of 8 mm between the stove and the pan is considered to be the optimum distance.

(b) Distance between Grate and Pan Bottom. This distance must be chosen such that the effect of radiation heat (which carries away the heat released in the fuel-bed and increases effectiveness with less distance) and convection heat (which is dominant in the transfer process in the flames and thus is important in burning all the volatiles and decreases in effectiveness with less distance) is balanced and maximized. It was found that the distance should be chosen according to the ratio of the power output (burning rate) of the fire to the power which should be 2:5. In this way not only was efficiency increased but material used in making the stove was reduced by 10%. The following pan-grate distances for the Mai Sauki were proposed:

Stove No.	Pan Diam.	Distance Pan-Grate	Savings
	(cm)	(cm)	(%)
1	19.1	9.5	15
2	23.9	11.5	15
3	27.7	13.0	10
4	30.6	14.0	10
5	32.2	14.5	15
7	36.3	16.0	5

(c) Shield Height. There are three considerations in determining an optimal shield height. Increasing the height: (i) increases efficiency, (ii) increases costs in materials, and (iii) effects the cooking process (if concentrated gases become too hot above the level of the food, the food may

burn). Experiments showed that the efficiency improves with increasing shield height up to the point where the pan has its maximum diameter. Higher shields do not increase the efficiency. Because the original design had a taller shield, material costs could be reduced from 5% to 10%. The following heights are recommended:

Pan No.	Shield Templates	Height Proposed	Material Saving
		(cm)	(%)
1	7.0	5.5	7
2	7.0	6.0	4
3	8.5	6.0	8
4	9.0	5.5	11

(d) Grate. Experiments showed that given the wide entrance door of the Mai Sauki, the efficiency and combustion quality was hardly influenced when the porosity of the grate was varied from 0% to 50%. Experiments were conducted to reduce the size of the stove entrance and to replace the flat grate with a small chamber made of wire mesh thus improving combustion quality. The change from the flat grate to the wire mesh increased porosity from 5-10% to over 50% however, field tests showed that production costs were dramatically increased and combustion quality did not improve as significantly. Therefore, the modification of the grate was dropped.

Mai Sauki With Chimney

3. Though the Mai Sauki is a more efficient stove compared with the traditional metal stove, it has disadvantages including a serious comfort problem caused by smoke and the limited applicability for several pan sizes. A modified Mai Sauki was designed to address these problems and meet the following requirements: (a) maintain an efficiency of around 35% as is achieved with the regular Mai Sauki, (b) burn long wood sticks, (c) support the traditional spherical pans, and (d) allow for production and retail to be the same as with the Mai Sauki. An initial chimney stove has been designed with the following characteristics: a combustion chamber placed in an eccentric position with respect to the pan to obtain maximum heat transfer, a chimney with a height of 30 cm (fairly short to keep costs down but high enough to balance the resistances to flow) and a diameter of 7 cm, and concentric rings of varying sizes which allow for the use of varying sizes of pots for one stove. This prototype was tested under laboratory conditions and has complied with the conditions preset to its design. It will be further tested in the field and modified accordingly.

Mai Sauki Chimney Stove for Restaurants

4. Because there are numerous small roadside restaurants in Niamey which use very inefficient means to prepare food, the project decided to design a chimney stove which saves on fuel, accepts long wood and removes smoke from the cooking environment. The three most common types of restaurants which operate include: (a) ones where tea is served in which water is heated and then kept warm by placing a large tin or small barrel on the traditional malgache stove, (b) ones where meat is roasted in

which a U-shaped fire place is formed by three mud walls covered with a grate, and (c) traditional restaurants where rice and sauce are prepared in which cooking resembles the normal household cooking but on a larger scale (with open fires or on large malgache stoves). Since the project could not address all three cooking needs, the work was concentrated on a stove for the traditional rice and sauce restaurant. Two stoves were designed and tested in the laboratory, one of which was able to meet the requirements and maintain an efficiency of about 38%. However, because the already available size 10 Mai Sauki could meet over 90% of the restaurant's requirements, further work on the chimneyed stove has been discontinued.

COLLABORATION WITH INTERNATIONAL ORGANIZATIONS

1. Church World Service (CWS), the Association Francaise de Volontaires du Progrès (AFVP) and the Association Bois de Feu (ABF). In 1983, CWS and AFVP worked on adapting the improved stove - Ouaga metallique (welded and made of new sheet metal) to Nigerien requirements. Since 1984, AFVP has been training metalsmiths in production of the improved stove and the CWS has been selling the improved metal stoves as well as teaching Nigeriens how to make the Albarka stoves (an improved three stone stove made out of clay and straw). With the initiation of a third participant in the improved stove activities in Niger, the Bank/GTZ Project, the three organizations divided among themselves the work to be done: the AFVP assumed the responsibility for training the metalsmiths in Niamey; CWS continued teaching Nigeriens to make Albarka stoves; and the Bank/GTZ project carried out the role of providing support in both production and training in Niamey, and assumed full responsibility in Tahoua and Maradi. The Bank/GTZ project also assumed the responsibility for developing and executing a dissemination strategy including publicity, sensitization and promotion campaigns.

2. Another participant in the stove scene is ABF which introduced groundnut shell briquettes produced by SONORA as an alternative fuel source to be used in the improved woodstove. The marketing of stoves carried out among the four participants was thus divided geographically as follows:

WB/GTZ	AFVP	ABF	CWS
Niamey	Niamey	Dosso a/	Niamey b/
Tahoua	Agadez		Rural Villages c/
Maradi	Zinder		
	Arlit		
	Tessaoua		
	Tchadaoua		

a/ Work finished in August, 1985.
b/ With improved metal stoves.
c/ With Albarka stoves.

3. Peace Corps. Four volunteers, two permanently based in Tahoua and two in Maradi, work on sensitization and promotion for the Bank/GTZ project. Seven additional volunteers were trained from the 12th to the 16th of August, 1985 by the project. They began work in October 1985 and are carrying out training in production and dissemination of both improved stoves (Albarka and Mai Sauki) in Diffa, Dakoro, Tanout, Agadez, Goure, and Bouza.

4. Institut de Recherches et d'application pedagogique (INDRAP). The Bank/GTZ project is collaborating with INDRAP to publish an education booklet on the energy savings by the improved stove. The booklet will be published by INDRAP and will be introduced during the school year 1985-1986.

5. Food and Agriculture Organization (FAO). The project is collaborating with the FAO in training Nigeriens in the production of improved stoves. The work is being done in the villages of Keita, Tamaske, Kao, Tabalak in the Department of Tahoua.

6. GTZ. The Project is collaborating with a GTZ executed project, "Projet Productivité Tahoua," in the rural zones around Tahoua. The GTZ Tahoua project is charged, in part, with the task of disseminating Mai Sauki improved stoves.

7. Other Organizations. The project provided support from July through mid-October, 1985 to a German volunteer in Diffa who worked on a sensitization program for improved stoves.

SPECIAL EVENTS

Journée Portes Ouvertes (Open Door Day) (April 28, 1985)

1. This day was organized by the Project as an open forum for all active participants in the Improved Stove Project (i.e., PNUD, World Bank, GTZ, CWS, AFVP, FAO, ONERSOL, German Volunteer Service, and Peace Corps) and for all other interested parties. Displays were set up of the work carried out thus far by the project and of the different sizes of improved stoves. Demonstrations were performed to show fabrication of and meal preparation on the improved metal stoves. There was also traditional music played to set a festive mood for the occasion. The day provided the means for the various organizations to exchange ideas and to become familiar with aspects of the project to which they had not previously been exposed.

Defilé du 1er Mai (May 1st Parade)

2. The project was invited to participate in an official parade on May 1, 1985. The parade was organized by the Ministry of Labor and Public Service (Ministère de la Fonction Publique et du Travail). The project members and metalsmiths paraded through the streets of Niamey dressed in the improved-stove imprinted clothes and carrying the stoves. This was the first time that the informal sector (metalsmiths of Boukoki market) paraded with other professionals of the formal sector.

Fête de l'Abre (Tree Celebration) (August 3-9, 1985)

3. This was a week-long event (August 3-9, 1985) put on by the Ministry of Water and the Environment (Ministeŕe de l'Hydraulique et de l'Environnement) in which the project was able to expose large numbers of

people to the benefits of improved stoves. At the main exhibition, the Project had photo and poster displays, distributed literature and sold t-shirts at cost, imprinted cloth and emblems and demonstrated stove fabrication and the effectiveness of the improved stoves through meal preparation.

Journée Mondiale de l'Alimentation (World Nutrition Day)
(October 16, 1985)

4. This special event organized by the Ministry of Agriculture (Ministère de l'Agriculture) took place in Maradi at the Maison des Jeunes et de la Culture. A popular musical group was engaged to compose and sing a song about the improved stoves. The song was recorded on a cassette to be played on the bus loud-speaker during rounds in Niamey. The group was very well received; in fact, the Minister of Agriculture, who was present during the festivities, asked the group to sing the song on the radio the following evening.

Chamber of Commerce Exposition (November 1-5, 1985)

5. The Project was invited by the Minister of Commerce, Industry and Transportation to participate in an exposition for industrial products of Niger that was held at the Oumarou Ganda Cultural Center (Centre Culturel Oumarou Ganda). For this event, the project set up an information stand, held cooking and stove fabrication demonstrations with the improved stoves. Also, as in other special events, promotional material (pamphlets, fliers, etc.) and t-shirts and the stoves themselves were distributed and sold respectively. In addition, the Project

participated in the publication of a catalog of participants in the first Nigerien industrial products exposition in which there is a page which discusses the project.

Foire sylvo-agri-pastorale (Silvo-agri-pastoral Fair) (March 21-23, 1986)

6. The fair was organized by the Prefecture of the Department of Niamey under the responsibility of the Ministry of Agriculture and was carried out in Tera (Department of Niamey). The participation of the project included stove production demonstrations by the metalsmiths and cooking demonstrations by the promotors accompanied by the same promotional material used in the Chamber of Commerce Exposition.

Annex 7

SAMPLE FUELWOOD PRICES

Week	Lacouroussou			Boukoki II			Gamkalley-Sebanguey			Koirategui			Average		
	Weight (kg)		Price F.CFA/kg	Weight (kg)		Price F.CFA/kg	Weight (kg)		Price F.CFA/kg	Weight (kg)		Price F.CFA/kg	Weight (kg)		Price F.CFA/kg
1	5.2	5.7	17.5	7.0	6.8	14.7	5.8	5.6	17.8	6.4	6.3	15.9	6.1	6.1	16.4
2	5.4	5.9	16.9	6.3	6.3	16.0	5.6	5.5	18.2	5.8	5.6	17.9	5.8	5.8	17.2
3	7.2	5.8	17.1	5.5	6.3	15.9	5.1	5.4	18.6	4.6	5.7	17.5	5.6	5.8	17.2
4	4.9	5.7	17.6	7.1	6.8	14.7	5.4	5.6	17.9	6.7	5.1	19.6	6.0	5.8	17.3
5	4.9	5.1	19.7	7.9	7.3	13.7	6.3	5.7	17.5	4.0	6.5	15.4	5.8	6.1	16.3
6	5.4	5.1	19.5	7.0	7.2	13.9	5.4	7.1	16.2	8.8	5.9	17.0	6.7	6.8	15.8
7	5.1	5.4	18.5	6.6	7.6	13.2	9.5	7.3	13.6	4.9	7.4	13.5	6.6	6.9	14.5
8	5.7	5.5	18.1	8.9	7.1	13.2	6.9	7.8	12.9	8.6	7.3	13.8	7.5	6.9	14.5
9	5.8	5.9	16.9	5.5	8.2	12.1	6.9	7.5	13.4	8.4	9.3	10.8	6.7	7.7	12.9
10	6.2	6.1	16.5	10.3	8.3	12.0	8.6	7.5	13.3	10.9	8.6	11.7	9.0	7.6	13.1
11	6.2	5.7	17.6	9.2	9.1	11.0	7.0	7.9	12.7	6.4	7.6	13.2	7.2	7.6	13.2
12	4.6	5.7	17.5	7.8	8.4	12.0	8.0	7.5	13.3	5.5	6.3	15.9	6.5	7.0	14.3
13	6.3	5.7	17.6	8.1	8.4	11.9	7.6	8.0	12.6	7.0	6.5	15.4	7.3	7.1	14.0
14	6.1	6.2	16.2	9.4	8.7	11.5	8.3	7.6	13.1	7.0	7.3	13.8	7.7	7.5	13.4
15	6.1	6.5	15.3	8.7	8.2	12.2	7.0	7.4	13.6	7.8	7.8	12.9	7.4	7.5	13.4
16	7.4	6.4	15.5	6.4	7.3	13.7	6.8	7.7	13.0	8.5	8.6	11.6	7.3	7.5	13.3
17	5.8	6.2	16.0	6.8	7.4	13.5	9.2	8.2	12.1	9.5	9.1	10.9	7.8	7.8	12.9
18	5.5	6.0	16.8	9.1	8.6	11.6	8.7	8.8	11.4	9.4	8.8	11.3	8.2	8.1	12.4
19	6.6	6.5	15.5	9.9	9.5	10.5	8.5	8.7	11.5	7.6	8.5	11.8	8.2	8.3	12.1
20	7.3	7.3	13.7	9.5	9.9	10.1	8.8	8.1	12.3	8.5	8.6	11.6	8.5	8.5	11.8
21	8.0	8.2	12.2	10.4	10.2	9.8	7.1	8.9	11.3	9.7	8.7	11.5	8.8	9.0	11.1
22	9.3	8.3	12.1	10.7	9.8	10.2	10.7	8.6	11.7	7.8	9.6	10.4	9.6	9.1	11.0
23	7.5	8.3	12.1	8.4	9.8	10.2	7.9	9.4	10.6	11.3	9.6	10.4	8.8	9.3	10.8
24	8.0	7.8	12.8	10.4	9.5	10.5	9.6	9.0	11.1	9.8	9.7	10.3	9.5	9.0	11.1
25	7.9	7.7	13.0	9.7	10.6	9.5	9.6	9.5	10.5	7.9	8.8	11.4	8.8	9.1	10.9
Ave.	6.3	6.4	16.1	8.3	8.3	12.3	7.6	7.6	13.6	7.7	7.7	13.4	7.5	7.5	13.6

Source: "Enquete-Suivi, Projet Foyer Amelioré," March 1986.

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FOR PRAPATH PREMMANI, SECRETARY-GENERAL, NATIONAL ENERGY ADMINISTRATION, BANGKOK, THAILAND. RE ESMAP PREINVESTMENT ACTIVITY ON STOVES AND KILNS DISSEMINATION. THIS CONFIRMS ITEMS WE DISCUSSED DURING TELEPHONE CALL MAY 19: AAA. EYE ARRIVE BANGKOK WITH ROBERT VAN DER PLAS OF ESMAP WEDNESDAY PM JUNE 4 DUSIT THANI HOTEL. CONSULTANTS TEAM OF THREE FROM ITDG (UK) EXPECTED TO ARRIVE JUNE 8. BBB REQUEST MEETING WITH YOU AND SOMPONGSE THURSDAY JUNE 5 AM TO DISCUSS SELECTION LOCAL CONSULTANTS (MARKETING ASSOCIATE AND SOCIOLOGIST) AND INITIAL FIELD TRIP PROGRAMME FOR MISSION FOLLOWING WEEK. HOPE TO INTERVIEW AND MAKE FINAL SELECTION OF LOCAL EXPERTS FROM YOUR LIST WITHIN FEW DAYS OF MY ARRIVAL. OF GREATER IMPORTANCE IS ROLE OF LOCAL MARKETING ASSOCIATE. PLEASE ENSURE ADEQUATE NUMBER GOOD CANDIDATES FOR THIS POST. CCC. PLEASE ARRANGE WORKING LEVEL MEETING OF MISSION WITH KEY NEA AND RFD STAFF MONDAY JUNE 9. ALSO MEETINGS WITH RELEVANT STAFF FAO (DR AROON) AND USAID SAME DAY. DDD. INITIAL FIELD TRIP PROGRAMME JUNE 10 TO 14 SHOULD INCLUDE VISITS TO 1. NORTHEAST AREA, PREFERABLY SITE PAST STOVES DISSEMINATION TRIALS, 2. EXISTING MANUFACTURERS IMPROVED STOVES,

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ESPECIALLY AUSTRALIAN GROUP AT ROI-ET PROVINCE, 3. NEA/RFD STOVES RESEARCH CENTER, 4. TYPICAL LARGE AND SMALL CHARCOAL PRODUCERS, AND 5. OTHERS YOU THINK IMPORTANT. APPRECIATE VERY MUCH IF NEA COULD PROVIDE TWO VEHICLES FOR USE BY MISSION. WE WILL PAY GAS AND OVERTIME OF DRIVERS. EEE. EYE LEAVE BANGKOK JUNE 15. ROBERT VAN DER PLAS WILL TAKE OVER MISSION SUPERVISION. CONSULTANTS WILL BE IN THAILAND TILL ABOUT JULY 4. BEFORE EYE LEAVE, EYE EXPECT WE HAVE AGREEMENT WORK FOCUS AND REST OF PROGRAMME FOR MISSION IN THAILAND. FFF. JUST RECEIVED FACSIMILE CV'S YOU SENT THROUGH MISSION OFFICE. PLEASE SEE IF CAN GET MORE APPLICANTS FOR MARKETING POST. MEANWHILE PLS ALERT FOR INTERVIEW JUNE 5 TO 8 PREECHA KUWINPANT, KARONG SRISAWAS, PREEDA PRAPERTCHOB, DHANIT ATSUPT AND CANDIDATES FROM SUNBIRDS CO, LTD. THANKS, REGARDS. ERNESTO TERRADO

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THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

Daily/WA1
WA files

DATE: May 21, 1986

TO: Distribution

INT|83|005

FROM Bernard Montfort, Division Chief, EGYS1

SUBJECT: ESMAP: Burkina - Technical Assistance Program

1. Please find attached a copy of the final version of the above report. The report was dispatched to the Bank's Resident Mission in Burkina on April 25, 1986, for distribution to government agencies. The main agencies concerned are the Ministry of Plan, the Burkina Energy Institute, the Ministry of Environment and Tourism, SONABHY (the petroleum import and distribution parastatal) and SONABEL (the national electric power utility).

2. The report presents terms of reference for a program of technical assistance covering the energy sector's priority needs over the period 1986-88. Three of these activities should be executed as soon as possible. These are: (a) preparation of an urban household energy project, including promotion of improved cookstoves, promotion of kerosene for cooking, and support to forestry policy, (b) assistance for management of the importing and distribution of petroleum products, and (c) rehabilitation of the Ouaga-2 fuel oil-fired diesels. We have invited donors (including the Bank) to finance the execution of these activities either directly or under ESMAP.

3. The Government of Norway has now agreed to finance the first phase of the Urban Household Energy activity as well as one or more of the three components of the second phase. This activity will therefore be launched as soon as we have the Government's agreement on timing.

4. We are still looking for finance for the two other top priority projects. In late 1985 the Government created a new parastatal (SONABHY) with an ill-defined role in the importing and distribution of petroleum products. The proposed technical assistance activity would be a good opportunity to advise the Government on ways of maximizing private sector management of the subsector -- by means of tenders, management contracts etc. At the time of our last mission to Burkina (October 1985), the Government stated its intention to write to the Bank to formally request technical assistance along these lines. Our cover letter of April 25, 1986, to the Government notes that we have yet to receive this request. In the meantime the French Government has indicated that a contribution to this activity via the FAC might be possible in early 1987.

5. Following a formal request from SONABEL (their letter of March 3, 1986), the possibility of Bank or ESMAP financing for the rehabilitation of the Ouaga-2 fuel oil-fired diesels was discussed within the Bank -- by WAPEG (Messrs. Bauer, Ouahes, Menezes), the Power Advisory Unit (Mr. Fish), the EGYS1/S2 power efficiency group (Mr. Gulstone) and the Legal

Department. The consensus appears to be that both options are feasible provided the activity avoids any suggestion of assigning responsibilities among the equipment suppliers, subcontractors and SONABEL. In late March, WAPEG was considering the possibility of piggy-backing the activity on a Special PPF for electrical interconnection of Burkina with Ghana. ESMAP financing remains an option if the Special PPF idea does not proceed. A tentative reply to SONABEL should be drawn up as soon as possible.

6. Please contact either myself or David Craig (D-638, X-76960) for any follow-up on these activities.

Distribution:

Messrs. Thalwitz, O'Brien (WANVP); Fuchs, Husain, Bouhaouala
Bauer, Davis, Menezes, Blanchi, Gorse (WAP);
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Iskander, Dosik, Fish, Heron, de Capitani, Ahmed,
Craig, Floor, Sherbiny (EGY);
Rogerson (World Bank Res. Rep., Burkina);
Harland, Cox, Rothermel (UNDP)

Mmes. Leach (WAP); Jonas, Putz (WA1); Haug (IND)

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MESSAGE NUMBER: M416

TEST NUMBER (FOR CASHIER'S USE ONLY):

START HERE

MR. CHOI, RESIDENT REPRESENTATIVE, INTBAFRAD, ACCRA, GHANA.

(AAA) WE ARE PLANNING TO FIELD A MISSION CONSISTING OF MESSRS. MATTHEW MENDIS (EGYPA) AND JAHANGIR BOROUMAND (EGYS1) TO INITIATE WORK ON THE ESMAP SAWMILL RESIDUE UTILIZATION STUDY. THEY ARE SCHEDULED TO ARRIVE IN ACCRA SATURDAY MAY 31 ON SWISS AIR FLIGHT 256 FOR A STAY OF ONE WEEK BY MR. MENDIS AND TWO WEEKS BY MR. BOROUMAND. FOR DETAILS PLEASE SEE TELEX DATED MAY 19 TO MR. DENKYI OF NEB AND COPIED TO YOU. PLEASE CONFIRM THAT TIMING OF MISSION IS SUITABLE TO THE GOVERNMENT. (BBB) WOULD GREATLY APPRECIATE IF YOUR OFFICE COULD CONFIRM HOTEL RESERVATION AT THE NORTH RIDGE HOTEL FOR (1) MR. MENDIS FOR THE PERIOD MAY 31 TO JUNE 6, (2) FOR MR. BOROUMAND FOR THE PERIOD MAY 31 TO JUNE 13. BEST REGARDS, MASOOD AHMED, DEPUTY CHIEF, ENERGY STRATEGY AND PREINVESTMENT DIVISION I, INTBAFRAD.

END OF TEXT

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CLASS OF SERVICE: TELEX: TELEX NO.: 2207 DATE: 05/20/86

SUBJECT: UNDP-Sawmill Residue

DRAFTED BY: JBoroumand:fle EXTENSION: 7-5507

CLEARANCES AND COPY DISTRIBUTION:

cw & cc Mr. Aggarwal (WA1DB).
cc Mr. Mendis (EGYPA).

AUTHORIZED BY (Name and Signature): Masood Ahmed, Deputy Chief, EGYS1

DEPARTMENT: ENERGY

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INT/83/005

May 20, 1986

Dr. A. J. Sujardi
Director for New Energy Development
Ministry of Mines and Energy
JL. Merdeka Selatan 18
Jakarta, Indonesia

Re: Indonesia: Energy Efficiency in the Brick, Tile and Lime Industries

Dear Dr. Sujardi:

As requested in you telex of May 15, 1986, we are pleased to forward to you a copy of the outline of the subject activity proposal which includes the activity's background, objective, work schedule, justification and the draft terms of reference of ESMAP staff and consultants involved. As you may notice, the outline which reflects your discussions with Mr. Willem Floor during his recent mission to Indonesia does not differ significantly from previous versions.

We have almost completed the preparatory work for the field assignments and are looking forward to implementing the activity as agreed with you.

Sincerely yours,

Bernard Montfort
Chief
Energy Strategy and Preinvestment
Division I
Energy Department

Attachment

cc and cw: Mrs. Hamilton (AEAIN); Mr. Albouy (AEPEN); Mr. Thadani (EGYS1)

BFrueh:dap

INT/83/005
5/19/86

Back to office report

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

F338
INT/83/005
5/19/86

DATE: May 19, 1986

TO: Bernard Montfort, Division Chief EGYS1

FROM: Willem Floor, EGYS1

EXT: 7-5425

SUBJECT: Back-to-Office Report: Indonesia/Netherlands

1. In accordance with my TOR I arrived in Jakarta on April 3 last, to discuss with the Government the scope of work for a number of projects to be financed by the Government of the Netherlands (GON). These projects had been identified during an earlier mission in March 1985, and have been discussed with AEPEN and AEAIN on the basis of short activity outlines on the occasion of AEPEN's preparation of an Indonesia energy strategy paper. The mission itself, as well as the projects, also were discussed during the last CAM meeting. Discussions were held with public and private sector organizations, who might participate in the execution of these projects as consultants. Agreement on five studies was reached with both the GOI and the Dutch embassy in Jakarta. The reaction by the GON in the Hague was positive, although it reserved its final decision on three of the five studies until it had studied the detailed proposals. A list of persons met has been annexed.

Brick, Tile and Lime Study

2. The GOI (DJLEB) agreed to the scope of work outlined in the activity initiation brief (AIB) submitted by ESMAP. It also agreed that we should extend the scope of work to the type of product made by the said industries. The importance of this point was also stressed by UNIDO that has been active in this field in Indonesia, developing technical modules for that industry, for the last 10 years. In a separate meeting with other ministries and government agencies concerned these also approved of this approach. During this meeting they welcomed the ESMAP initiative and stressed the need to look into the potential of the use of coal and gas for the brick and tile industry. It was agreed that ESMAP should make available the mission's TOR to DJLEB as soon as possible. The GON has agreed to finance this study. I also met with the consultant's company, BCI, that had been identified as a potential participant for the study. Mr. Zainuddin of this company appeared to be a well-qualified and experienced candidate whose broad experience with inter alia the brick, tile and lime industry would provide a useful input to the study team. He also would be a good candidate to include in the main mission as the extension specialist, since he has been active in this field for this industry.

Gasifier Study

3. DJLEB wants ESMAP to assist the GOI in promoting the application of gasifier technology, both wood and rice-husk gasifiers. To that end I had discussions with IT Bandung, that has developed good technology for both fuels. ITB held the view that, as far as their wood gasifier is concerned, it could go commercial, whilst their rice-husk gasifier needed another year of further field testing before being offered to the the public. I therefore suggested to DJLEB that we first execute a market study to establish what the size of the market looked like for both fuels. Meanwhile, a technical study should be carried out by ITB on the rice-husk gasifier which had to establish by the end of the year whether it could be commercialized. The wood gasifier has been tested extensively and has a good track record of 5,000 running hours. This proposal also was acceptable to ITB and the Dutch embassy. The GON in the Hague also agreed with the execution of the market study, but preferred to wait with any dissemination activity of the rice-husk gasifier until the Bank's gasifier monitoring program would be completed. I agreed to that with the proviso that we may wish to stick to the technical study by ITB if the monitoring program for Indonesia will be delayed considerably. The agreement that has been made between the Bank and ITB with regard to that activity so far has not materialized and it is unknown when action will be taken by ITB, An AIB for the gasifier marketing study is in statu nascendi and will be circulated shortly.

4. DJLEB also wanted ESMAP to study the potential of a US rice-husk combuster. I informed DJLEB that this would be possible in principle, if he would make available the required site-specific information. To that end we had a discussion with the Ministry of Cooperatives, that is interested in buying this combuster. I pointed out that the combuster is expensive, can only be used when there is a large rice-milling operation (3 t/h), and needs technical infrastucture. The Ministry promised to supply ESMAP with the required data, which we are awaiting.

Household Energy Strategy

5. ESMAP had prepared a draft AIB for this activity (to be circulated shortly) which was discussed in detail with DJLEB, and some potential participants. Full agreement was reached on this project with DJLEB, while a discussion with MIGAS, to check the GOI position re the use of LPG for domestic purposes, also resulted in an endorsement of the approach taken in the AIB. Lengthy discussions were held with three NGOs active in the field of inter alia woodstove dissemination, as well as with LIPI (National Physics Lab/Bandung) and the Gadjah Mada University (Yogyakarta), who will act as technical counterparts. While LIPI has a reasonably well equiped lab, the Gadjah Mada University has not and will require an input of hardware. The NGO's role will be mainly to assist in testing dissemination techniques. I visited some of Dian Desa's rural stove activities outside Yogyakarta, which convinced me that during the study we should critically analyze the NGO's delivery system.

Technically, the production of the ceramic biomass stoves had been well organized. However, the marketing of the stoves still had to be done by Dian Desa four years after the inception of the production capacity, which is certainly not the way we would like to go. The surveys will most likely be executed by IT Bandung (Prof. Poerobo's group). The GON required more time to study the lengthy AIB before it would take a final decision on this activity.

The Use of Woodwaste as a Fuel in Maluku

6. DJLEB, and the GON, also were interested in a study of the potential of the residues of the woodprocessing industry in Maluku as a fuel. After a discussion on the scope of work I drew up a draft AIB, which DJLEB circulated for comments to the Ministry of Forestry and Rural Electrification. Comments were given in writing as well as their endorsement of the study. The Dutch embassy also agreed to this study, while the GON will give its final decision shortly.

Development of Electrotechnical Standardization

7. This project was new to us and proposed by DJLEB. The GON, which is in principle interested in financing this study, was worried that PLN might take exception to this study. A long discussion with the DJLEB director in charge of policy making in this field made clear that it is the Ministry (in fact his DG), and not PLN that makes the policy which PLN has to execute. PLN has a lab to check on its standards, but a similar facility (and regulations) do not exist with regard to the industrial, household, and university sectors. DJLEB wants us to study the scope of work, manpower requirements, cost, and operation of a system that develops, certifies and controls electrotechnical standards for the sectors mentioned. Counterpart would be the subdirectorate of Standardization of DJLEB. It was agreed that after consultation within the Bank, ESMAP should draw up an AIB (i.s.n.) in collaboration with AEPEN. The GON will decide on the financing of this study shortly.

The Development of LNG/LPG miniplants

8. DJLEB suggested that ESMAP also execute a study re the feasibility of LNG/LPG miniplants; to that end it also organized a meeting with MIGAS. We agreed that in view of the BEICIP gas utilization study the proposed activity would not be an appropriate one. MIGAS therefore suggested that we studied the potential of CNG for the transportation sector. I replied that this indeed was an interesting topic, but that I would prefer to discuss its appropriateness with the people most concerned with this subject in Washington before making any commitment, either negatively or positively. We therefore agreed that ESMAP would inform DJLEB about the outcome of the discussions in Washington, and if these would be positive, that we would make an AIB. The GON is in principle interested in financing such a study and awaits our further proposal.

Tentative Mission Schedule

9.	Brick/Tile & Lime	July 1986
	Gasifier Study	July 1986
	Household Energy Study	October 1986
	Woodwaste Study	October 1986
	Electro Standards	October 1986

Discussion with Resident Representative

10. I liaised with both the Jakarta Bank office, as well as with UNDP. The latter is especially interested in the brick/tile/lime study since it complements and enhances their (UNIDO) efforts. In fact UNIDO expressed the possibility of possible co-financing (for a training component) of an eventual follow-up project.

Discussion with GON

11. The GON reacted positively to the scope of work of the five projects submitted to it for financing, which we discussed in great detail. We agreed that ESMAP would submit the total package of five (possibly six) studies to the GON in the form of draft AIBs, accompanied by the price tag, the time planning, as well as the names of the consultants selected for the missions. This last item was important to them since the GON wants to have an idea whom we are hiring, and to have the possibility to suggest alternative or additional candidates.

Diesel Rehabilitation

12. The Dutch were keen to know how far the Bank had progressed with the pilot project for the rehabilitation project. Further, the GON wanted to know whether the Bank would be interested in a larger follow-up project. It also was interested in financing the training component mentioned in the diesel rehab report, as well as in the spectographic lab proposal. They also informed me that they had informed the GOI (BAPPENAS) that, as far as PLN matters are concerned, all bilateral funds will be channeled via the Bank to create a united front. The GON therefore wishes more collaboration with the Bank. On my return I have informed Messrs. Liebenthal and Takor of this and have requested them to get in touch with the Dutch.

ILO Conference/ Women and Energy

13. I attended this conference in the Hague at the request of ILO during two days. It mainly served as a forum to report the results of a number of studies on the above issue commissioned by ILO, which were executed in Peru, Ghana, and Indonesia. Further, to discuss the identified issues with experts from other countries, who are facing and dealing with similar issues. Finally, to present and discuss a number of project proposals, which the ILO wants to submit to the donor community. The studies themselves did not offer new insights as far as the role of

women and energy are concerned. At the request of the ILO I gave a short outline of the type of work the Bank, and especially ESMAP, was doing in this and related areas. I also made suggestions how the project proposals could be made into more realistic ones. Finally, together with Mr. Newcombe (EAPEG), I held discussions with staff and the Government of Ethiopia representative on the Ethiopia cooking efficiency project about which Mr. Newcombe will report separately.

Distribution

Messrs. Karcher, Davar, Nayyar, Ahmed (AEP)
Baird, Mead, Kim (AEA)
Bourcier, Hume, Sadove, Saunders, McCarthy, Dosik, Fish, Heron, Kalim, de Capitani, Pinard (EGYD)

Rao, Res. Rep., Jakarta, Indonesia

Mmes. Hamilton, Choksi (AEA)

cc: EGYS1 Higher Level/Res. Staff

WMFloor:my

Annex I: List of Persons Met

Ministry of Power and Energy

Dr. A.J. Surjadi, Director, New Energy Development
Endro Utomo Notodisuryo, Head, Rural Energy Division
Djursan Hamid, Director, Power Operations

Brick/Tile/Lime

A. Hariman, Kantor Menteri Negara Perumahan Rakyat, Jakarta
Zulkarnaen Aksa, Human Settlements Institute, Bandung
Ir. Pratopo Soemitro, Director, Ceramics Research Institute, Bandung
Sudarmadji, Agency for Industrial Research and Development, Jakarta
Sri Hudyastuti, Ministry of Environment

NGOs

Sentanu Hindrakusuma, Yayasan Mandiri, Bandung
Matthew Schwartz, idem
Listianto SE, Lembaga Studi Pembagunan, Jakarta
Achmad Rofi'ie, Director, LSP, idem
Aryanto Sudjarwo, Dian Desa, Yogyakarta

Technical Organizations

Dr. Suwarto Martosudirjo, LIPI
Prof. Dr. M.S.A. Sastroamidjojo, Gadjah Mada University, Yogyakarta
Prof. Dr. Herman Johannes, idem
Prof. Dr. Prayoto, MIPI, idem
Prof. Dr. Sudarno Harjosuparto, IT Bandung
Prof. Dr. Saswinadi Sasmojo, IT Bandung
Ir. Auke Koopmans, Field Leade, Gasification, idem

MIGAS

Ir. Nurani Mudayat, Head, Natural Gas Processing and Transportation

Ministry of Cooperatives

Muslimin Nasution, Director, Badan Penelitan dan Pemgembangan Koperasi

United Nations

A.Patten, Deputy UNDP Resident Representative
G.L. Narasimhan, UNIDO Field Advisor
Thomas Ringholt, UNIDO
Ir. Idi Soebroto, UNIDO national expert

The World Bank

D.C.Rao
David Williams

Banking and Business Consultancy Indonesia (BCI)

Steffen Smeenk
Ir. D. Zainuddin

Duth Embassy - Jakarta

W. Wessels
R. Bosch

Ministry of Foreign Affairs, The Hague

R. Smit
H. van Trigt
J. Boer
H. van Eden

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ZCZC BAN0479
EGYPS AEAKO
.IBRDBAN
INTBAFRAD BANGKOK THAILAND MAY 13, 1986

FOR HUME COPY IKRAM
RE YOUR TELEX MAY 8.
AAA POLITICAL DEVELOPMENTS UNLIKELY TO HAVE MUCH IMPACT ON SUB-
STANCE OF ESMAP MISSION IN JUNE. ONLY ISSUE LIKELY TO BE SUSPENDED
IS STRUCTURE OF ENERGY POLICY COORDINATING MECHANISM. BUT WE JUST
HAVE TO WORK IN EVEN LESS STRUCTURED ENVIRONMENT THAN USUAL.
BBB PRIVATIZATION FORUM LIKELY TO BE END-JULY OR EARLY AUGUST.
JUNE MISSION COULD DISCUSS BRIEFLY WITH ORGANIZERS AT WHICH LEVEL
BANK PARTICIPATION WOULD BE USEFUL IF AT ALL POSSIBLE AT THAT TIME.
CCC WILL LET YOU KNOW FORMAT OF LUNCHEON ADDRESS WHEN DATE IS
CLEARER. ASSUME YOU ARE AVAILABLE JUNE 12 THROUGH 18.
REGARDS
JECHOUTEK

=05130916

ALT RTD FROM:EAS

NNNN

THE WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT/83/005

DATE: May 13, 1986

TO: Mr. Stephen Eccles, Assistant Director, WAPDR

FROM: Masood Ahmed, Deputy Division Chief, EGYS1

SUBJECT: ESMAP: LIBERIA - Power System Efficiency Study

NO attachment

1. Attached for your clearance is a draft copy of the Green Cover Report Liberia: Power System Efficiency Study which we would like to send to the Government of Liberia for discussion and their clearance.

2. The report has been modified to reflect the changes suggested by the participants of the Yellow Cover review meeting and a subsequent meeting with WAPPE. In particular, we have made more explicit the way the recommended programs should be implemented, and the links between the power efficiency study done by EGYS1 and the ongoing strategic study of state enterprises by WAPPE. At the request of WA1DB, we are planning to join their mission and discuss the report with the Government of Liberia in early June.

3. If you have any further comments or questions on the report prior to clearing it, please address them to Miguel Bachrach (ext. 73539) or myself (ext. 73996).

Attachments

cc: Messrs. Bauer, Davis, Menezes, Mena (WAP);
Aggarwal, Berk, L. Ramirez (WA1);
Hume, de Capitani (EGY)

MBachrach:tla/bre

FORM NO. 27 - OCR
(3/82)

WORLD BANK OUTGOING MESSAGE FORM Cable, Telex

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PAGE 1 OF 3

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INTBAFRAD, NEW DELHI, INDIA ATTENTION: MR. R. G. GRIMSHAW.

PLEASE PASS FOLLOWING MESSAGE TO MR. NILAMBER CHATTERJEE: QUOTE (AAA) THANKS FOR YOUR TELEX OF APRIL 30 CONFIRMING YOUR AVAILABILITY TO PARTICIPATE IN THE ESMAP MISSION TO THAILAND IN JUNE. YOU WILL BE RESPONSIBLE FOR FORMULATING THE THAILAND FUELWOOD IDENTIFICATION PROJECT, ESPECIALLY ITS COST AND EXPECTED BENEFITS. IT INVOLVES A MAXIMUM OF 100 DAYS, INCLUDING FIELD WORK, REPORT PREPARATION AND A POSSIBLE TRIP TO HEADQUARTERS IF NECESSARY. PLEASE LET US KNOW IF YOU COULD THEN ALSO PARTICIPATE IN FINAL THAILAND FUELWOOD PREPARATION MISSION AS SOON AS POSSIBLE AFTER YOUR NOVEMBER COMMITMENT WITH SWEDFOREST, E.G. IN THAILAND FROM DECEMBER 1-19, FOLLOWED BY REPORT WRITING IN WASHINGTON JANUARY 5-30. OUTLINED TERMS OF REFERENCE ALONG WITH BACKGROUND MATERIAL BEING DISPATCHED. (BBB) WILL ALSO AIRMAIL THE FOLLOWING FORMS: REQUEST FOR PAYMENT OF PROFESSIONAL SERVICES, TIMESHEETS AND STATEMENT OF EXPENSES WHICH SHOULD BE FILLED OUT ON RETURN FROM MISSION AND SENT TO US AS SOON AS POSSIBLE, ALONG WITH USED AIRLINE TICKETS STUBS AND RECEIPTS FOR HOTEL, MISCELLANEOUS EXPENSES. THEREAFTER, PLEASE SUBMIT FEE CLAIMS AND TIMESHEETS MONTHLY. PLEASE NOTE THAT IT TAKES FOUR TO SIX WEEKS FOR CONTROLLERS TO EFFECT PAYMENT. (CCC) STANDARD

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LETTER OF APPOINTMENT READS IN PART AS FOLLOWS. QUOTE FOR A PERIOD OF THREE YEARS AFTER TERMINATION OF YOUR EMPLOYMENT AS A CONSULTANT, YOU SHOULD NOT SEEK OR ACCEPT WORK CONNECTED WITH PROJECTS OR OPERATIONS THAT WERE YOUR DIRECT CONCERN OR MAKE USE OF MATERIAL USED DURING THIS ASSIGNMENT, UNLESS THE PRIOR CONSENT OF THE BANK HAS BEEN OBTAINED UNQUOTE. (DDD) YOU ARE ENTITLED TO LESS THAN FIRST CLASS TRAVEL BY MOST DIRECT ROUTE. WILL SEND TRAVEL ORDER AND DOLLAR ADVANCE THROUGH WORLD BANK OFFICE IN DELHI, INDIA. PLEASE CONTACT THEM FOR ROUTING. OUR TRAVEL OFFICE CAN RESERVE HOTEL IN BANGKOK, THAILAND BUT NEED YOUR ARRIVAL DATE AND FLIGHT NUMBER. PLEASE ARRANGE FOR VISAS, VACCINATIONS AND DOCTORS CERTIFICATE. THIS CERTIFICATE MUST SAY THAT YOU ARE IN GOOD HEALTH AND FIT TO TRAVEL. ALSO TELEX YOUR PASSPORT NUMBER AND EMERGENCY CONTACT ADDRESS AND TELEPHONE NUMBER IN DELHI, INDIA. (EEE) IN ABOUT TWO WEEKS MS. REBOLLAR OF PERSONNEL DEPARTMENT WILL BE IN TOUCH WITH YOU RE ADMINISTRATIVE DETAILS AND FEE DETERMINATION WHICH IS BASED ON BACKGROUND AND EXPERIENCE. UPON YOUR CABLED ACCEPTANCE OF PERSONNEL'S OFFER, YOUR CONTRACT WILL BE PREPARED. IF YOU HAVE ANY QUESTIONS PLEASE CALL MARGARET WALSH AT (202) 477-5426 BETWEEN 10 AND 5 PM. REGARDS, MASOOD AHMED, DEPUTY DIVISION

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CHIEF, ENERGY STRATEGY AND PREINVESTMENT DIVISION I, ENERGY

DEPARTMENT, INTBAFRAD. UNQUOTE.

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CLASS OF SERVICE: TELEX TELEX NO.: 3161493 DATE: 5-13-86

SUBJECT: ESMAP Mission to Thailand

DRAFTED BY: Margaret Walsh/vmh

EXTENSION: 75426

CLEARANCES AND COPY DISTRIBUTION:
cc: Mr. Grut (EGYS1)
Mr. Taylor (EGYS1)

AUTHORIZED BY (Name and Signature): Masood Ahmed, Dep. Div. Chief, EGYS1

DEPARTMENT: Energy

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THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT/83/005

DATE: May 13, 1986

TO: Mr. Zia Mian, Senior Energy Planner, EGYD1

FROM: Masood Ahmed, Deputy Division Chief, EGYS1

SUBJECT: ESMAP: South Pacific - Petroleum Supplies Study
Terms of Reference

1. You will arrange to arrive in Suva on or about May 19, 1986. Mr. Meikle (Consultant) will join you in this mission. During the mission, you will discuss the Green Cover draft of the report on South Pacific Petroleum Supply Management Assistance with the representatives of the governments which have participated in this study. After these discussions, you will finalize the report for publication. You will also pass on the information package (documentation and software) on the associated computer model which has been prepared to help monitor the acquisition cost of petroleum imports.

2. After completing your mission in Fiji, you will proceed to Australia and Singapore and hold discussions with the representatives of oil companies. There you will apprise them of the findings of the ESMAP study. Before proceeding to East Africa you will courier the marked-up draft back to the office, and upon your return you will prepare a brief Back-to-Office report and proceed to finalize the ESMAP study in Blue Cover.

cc and cleared with: Messrs. Iskander (EGYD2), Ngandu (AEASP)

cc: Messrs. Dutt, Stuben, Yussuf (AEASP);
Bourcier, Hume, McCarthy (EGY);
Nayyar, Ahmed (EAPEN);
Montfort, Taylor (EGYS1);

Ms. Farmer (AEASP)

MAhmed:bre

THE WORLD BANK INTERNATIONAL FINANCE CORPORATION

INT/83/005

OFFICE MEMORANDUM

DATE: May 9, 1986

TO: Messrs. R. de Lange and D. Zainnudin, Jakarta, Indonesia, Consultants

FROM: Mr. Bernard Montfort, Division Chief, EGYS1

EXT: 74844

SUBJECT: Indonesia: Improving Energy Efficiency in the Brick, Tile and Lime Industries - Terms of Reference

1. To help prepare the data base for a proposed project for improving energy efficiency in the brick, tile and lime production industries, you will analyze existing documentation on these three industries and the respective product markets principally for the islands of Java and Bali. You must take note of the national context to the extent necessary for issues that relate to supply of fuels and product markets.

2. You should begin work on this task not later than June 2, 1986, and complete a final draft of your report not later than July 4, 1986. You will need to update and/or verify data and also collect some primary information through interviews with official and non-official agencies and a sample of suppliers, manufacturers and end-users. It is expected that the data collection and investigation phases will take not more than four weeks and you will have at least one full week to prepare your report. Your work will be supervised by Mr. B. Frueh, EGYS1, who will be joining you in Jakarta on June 16, 1986. In particular, you will:

(a) analyze the subject production sectors with respect to: areas of concentration/location of plant sites, range of products, scale of production, seasonality of production, production method, type of kilns used, number of operators, number of officially registered plants per region, estimated number of non-registered plants per region, number of people employed in the sectors and type and quantity of energy used;

(b) establish organizational charts for the subject industrial subsectors showing the main interactions between distinguishable types of brick, tile and lime producers, energy and raw material suppliers, types of consumers, institutions of the whole and retail sectors where applicable, financial institutions and any government agency;

(c) determine the main structural changes that have taken place in these industrial subsectors over the past 15 years and elaborate on their causes;

(d) determine the accessability for the various types of brick, tile and lime producers to financial markets, especially credit markets. In this context, name the financial institutions involved in the brick, tile and lime industries and their financing arrangements offered;

(e) analyze the brick, tile and lime markets. This will include a description of market segments especially by size, location, type of consumer, end-use of products, competing materials, importance of these products on these market segments and seasonality of demand;

(f) elaborate on the main determinants of future demand in the market segments identified under (e) and estimate the likely future demand (about 15 years) for bricks, tiles and lime viewed against a range of scenarios. The assumptions made for the various market segments should be specified;

(g) assess the marketing and distribution systems for bricks, tiles and lime. This includes a description of the organizational structures from producers over wholesale and retail sectors to consumers, collection of a series of reference prices for the subject products (prices at kiln site, contract prices, wholesale and retail prices) and prevailing transport costs. Also derive through a number of sample interviews with end-users and indicative picture on the prevailing product supply transparency, viz: prevailing information on product supply aspects such as location of alternative supply sources, product quality and purchasing arrangement;

(h) determine the available amount and location of fuel resources that are used or could be used to meet the energy requirements of Java's brick, tile and lime industries. Fuels to be focused on are: firewood, charcoal, coal, agricultural residues, sawmill wastes, used motor oil, gas and other petroleum products;

(i) determine for the fuel types mentioned under (h) the main alternative uses and location of those consumer groups eventually competing for these fuels. Where applicable, analyze the existing marketing/distribution procedures for the various fuels, which includes organizational structures, transport modes and for a sample of reference points fuel prices.

(j) determine the calorific value of those main agricultural residues that could be used as a fuel in the brick, tile or lime industries.

3. You will outline your findings in a concise report to be made available to the main mission for the subject activity upon the mission members' arrival in Jakarta in early July, 1986.

cc and cw: Messrs. Albouy (AEP); Thadani (EGYS1);

Mrs. Choksi (AEA)

BFrueh:dap

THE WORLD BANK INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TOGO
Power Distribution Project
Div. Files

DATE May 13, 1986

TO Mr. B. Montfort, EGYS1

FROM J.F. Bauer, WAPEG

EXTENSION 75885

SUBJECT BENIN: Power Rehabilitation Project, Cotonou Distribution
TOGO: Power Rehabilitation Project, Lomé Distribution
ESMAP Loss Reduction Studies

INT 83 005

1. This will confirm recent conversations between our staff and Mr. Gulstone on the subject of the commercial services situation in Lomé (billing, collection, metering). It was agreed that your division would procure the services of a specialist(s) to analyze the situation, make recommendations and follow-up on their implementation (hardware, software, test equipment, meter management, technical assistance and training). Mr. Gulstone recommended Mr. Nickson and advised that he would be available in July 1986.

2. Upon further consideration of the commercial services situation in Lomé, we suggest that Mr. Nickson be assisted by a meter engineer, as required, for the assignment. Your comments on this suggestion will be appreciated.

3. Taking into account the geographic proximity of Lomé and Cotonou we would like to suggest the possibility of almost simultaneous execution of loss reduction studies in both cities.

4. We look forward to early discussion of the situation with you and your staff in order to finalize these aspects of the project preparation phase.

cc.: Messrs. Turner, Akpa, Magnusson (WA2DD),
Wilton, Davis, Ouahes (WAPEG)

CSigwalt/JLowe: sp

F-338

INT 83/005

ZCZC EASF0604 JWS0520
EGYPS AEAKO ADMCB
REF : TCP1 MET

BAN0464
EGYPS AEAKO
.IBRDBAN
INTBAFRAD BANGKOK THAILAND MAY 7, 1986

FOR HUME COPY IKRAM
RE YOUR TELEX MAY 1, 86, THAILAND ESMAP MISSION.
AAA BOTH NEA AND NESDB CONFIRM THAT MISSION TIMING ABOUT JUNE 12-1[illegible]
IS CONVENIENT. WILL PURSUE PREPARATIONS ON RECEIPT OF DRAFT STUDY
TOR.
BBB YOU MAY WISH TO TAKE OPPORTUNITY TO DISCUSS BANK PARTICIPATION
IN FORTHCOMING PRIVATIZATION WORKSHOP WITH PUBLIC ENTERPRISE
INSTITUTE AT CHULALONGKORN UNIVERSITY.
CCC ARE YOU OR BOB SADOVE INTERESTED IN BEING LUNCHEON SPEAKER FOR
GROUP OF SENIOR GOVERNMENT AND PRIVATE SECTOR EXECUTIVES AND
ECONOMISTS ON TOPIC OF CURRENT INTEREST SUCH AS QUOTE BANK'S VIEW
OF GLOBAL IMPACT OF FALLING OIL PRICES UNQUOTE? OKTAY PENAL'S
TALK HERE RECENTLY WAS WELL RECEIVED. REGARDS
JECHOUTEK

NOTE: FOURTH LINE UNDER CCC SHOULD OKTAY YENAL'S ETC

=05070833

ALT RTD FROM:EAS

NNNN

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT/83/005

NRIC

5/5

DATE: May 5, 1986

TO: Mr. Alberto de Capitani, Division Chief, EGYS2

FROM: Christopher R. Poncia, EGYS2

EXTENSION: 7-5284

SUBJECT: Proposed Documentary Format for Future ESMAP Activities

1. The persons listed below met on Friday, May 2 to discuss my memo of 4/18/86 as follows:

Objectives

2. The meeting supported the idea of developing a documentary format to (a) permit ESMAP donors to indicate overall program content and, possibly, planned financing levels; (b) support the new budgetary procedures (Mr. Hume's memo of 4/22/86); and (c) simplify document preparation. In principle, the meeting agreed the approach outlined in my memo of 4/18/86 of a global Program Agreement with IBRD for each donor agency and specific Task Sheets for each activity (Annex 1) rather than the UNDP Project Document format. The consensus was that it would be better to work within the existing UNDP framework if possible, rather than develop an entirely new structure.

Existing UNDP Procedures

3. The meeting reviewed the existing UNDP procedures in detail, as set out in Annex 2. It appears that the UNDP Project Document format can be avoided even where donor agency funds are channelled through the UNDP (i.e., compared to a separate trust fund) by the conclusion of task specific financing arrangements between the donor agency and the UNDP. The proposed Bank/UNDP/Donor Program Agreement and Task Sheet format would be designed to achieve this.

Accounting

4. A key issue under both existing and proposed documentary format is how accounts should be maintained by the UNDP and by the Bank Loan Administration Department (LOA). Under the present system, all donor agency funds for ESMAP (excluding trust fund arrangements and separate Project Document activities) are paid into a single UNDP account (INT/83/005), since the overall ESMAP program is regarded by UNDP as a single project. Examples of the separate monthly UNDP project sheet is attached at Annex 3. Likewise, all Bank payments, and UNDP reimbursement, are consolidated into a single account by LOA. This means that the UNDP and LOA accounting systems preclude the maintenance of separate accounts either for individual tasks (to assist budget control)

or by individual donor agencies (to assist donor accountability). This Department has therefore had extensive discussions with LOA regarding the maintenance by LOA of individual sub-accounts broken down by activity and donor agency, but no conclusion has been reached so far.

5. The meeting agreed that the maintenance of specific sub-accounts could cause an additional administrative load, particularly where the specific tasks were cofinanced by two or more donor agencies. On the other hand, it was pointed out that the Bank already maintains task specific accounts broken down by cofinancier for its own loans, and, arguably, should do so for funds administered by it on behalf of other donors. One possible approach outlined at the meeting would be for the UNDP to maintain two ESMAP accounts, the one covering donor agency funds made available to it for the ESMAP program generally (including all funds provided for our direct and overhead costs) and the other for funds made available for specific tasks only. In turn, LOA would break down Bank expenditures under these two main accounts into task sub-accounts.[1/] As regards the specific task account, each request submitted to LOA by EGYS1/2 for external payment would specify the task in question (as per current practice) and the donor agency(ies) financing the same as indicated in the Task Sheet which, in the case of two or more cofinancing agencies, would spell out the applicable joint or parallel financing arrangements.

Recommended Action

6. The meeting agreed that we should now consider the above on a preliminary basis with Controllers and thereafter prepare specific proposals for internal Bank review and thereafter submission to the UNDP.

Distribution

Messrs./Mmes. Ahmed, Owen, Sharkey (EGYS1); Alahdad, Clement-James, Hristodoulakis (EGYS2); Pope (EGYDR)

cc: Messrs. I. Hume (EGYPS), de Capitani, Bates (EGYS2), Floor (EGYS1)

CRPoncia:cah

1/ One problem is that LOA UNDP computerized accounts are incompatible with the Bank's MIS system.

I. Program Agreement Outline

Parties — UNDP, IBRD and Donor Agency

Whereas — Reference to ongoing ESMAP program and willingness of agency to provide support over a period of years.

Agreement — Donor Agency commits funds either to general program support or subject to its agreement of individual task in specific Task Sheets

Conditions

(a) Consultants (all nationals, percentage nationals, best efforts, none).

(b) Fund management (Trust Fund or UNDP ESMAP Program Account, provision for any subsequent funds which Donor Agency may wish to provide).

(c) IBRD disbursement and UNDP reimbursement procedures

(d) UNDP support (financial, non-financial)

(e) Reporting procedures

Signature by EGY Director/UNDP/Donor Agency

II. Task Sheet Outline

Task Description

Consultant TOR

Budget (for staff, overhead and consultants)

Implementation Program (including manhours for staff and consultants)

A.I.B. attached

Initialed by EGY Division Chief on clearance of A.I.B.

Existing UNDP/IBRD/Donor Agency (D.A.) ESMAP Arrangements

		(i)	(ii)	(iii)		(iv)		(v)
(1)	Type of Arrangements	DA/Bank Trust Fund	DA/UNDP Trust Fund	UNDP Energy A/C (INT/83/005/G/73/42)		UNDP DGIP [1] (INT/83/005/C/01/42)		UNDP, Country IPF
				Task Specific (DA Funds)	Core (UNDP Funds)	Task Specific (DA Funds)	Core (UNDP Funds)	
(2)	Examples	EEC (13 EAs) ADAB (Kenya Tea) Norway (Sudan Forestry)	French (4 EAs)	Denmark Finland Holland Switzerland UNDP Carib. Reg. Petrl. Expl. Prom.	ESMAP UNDP Staff	CIDA (Kenya Power, Uganda Forestry)		Trinidad (EA) Paraguay (EA) Zimbabwe (ESMAP) Senegal (ESMAP)
(3)	Is Proj. Document Format mandatory for Specific Activity	No. (Ad hoc agreement between IBRD and DA	No. (As(i) except ag between UNDP and DA	Under discussion	No. (Single Project Document for whole Program)	No (Individual UNDP agreement with CIDA and ? others	No.	Yes
(4)	What A/Cs does UNDP maintain	N/A	Specific trust fund A/C	Single A/C for the overall ESMAP Project. Specific task sub-accounts may be possible with Proj. Doc. or other format.		As (iv)		Individual IPF Country A/C
(5)	IRBR A/C	Individual	As UNDP	As UNDP		As UNDP		As UNDP

[1] Division of Global and Interregional Projects.

INT/83/005

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

May 9, 1986

Dr. Thanit Yingvansiri
Chief, Planning Division
Royal Forestry Department
Phaholyotin Road
Bangkok 10900
Thailand

Dear Dr. Thanit,

Northeast Region Fuelwood Project:
ESMAP Identification Mission

I hope you received a copy of the telex which we sent on May 9 through the World Bank office in Bangkok to RFD and NEA, proposing that the mission take place from June 16 through July 4, asking whether RFD would again kindly arrange our field trip to the Northeast, e.g. during the week 23-28 June and saying that we would write directly to you about this matter.

The counterpart agency in this matter is the NEA, and I will liaise closely with them during the proposed forthcoming mission, but in the actual formulation of the project we hope to work very closely with RFD. I would therefore be most grateful if you or someone on your staff would again consent to plan and coordinate our mission. I have more or less the following program in mind, if it meets with your agreement:

First Week (Bangkok)

After our initial contact with RFD, the Report Coordinator (see the draft terms of reference in the attached Activity Initiation Brief), Mr. R. Taylor and I would very much like to meet with the NEA and with the World Bank Office, to inform them about our work. Another important initial meeting, and one for which I should like the mission's Social Forestry Expert, Mr. N. Chatterjee, to accompany Mr. Taylor and myself, would be with the UNDP and with the FAO Regional Forestry Officer, Mr. Y. S. Rao, so that we can get the latest information about the UNDP/FAO forestry extension project which is under preparation, to ensure that the ESMAP fuelwood project will complement and not duplicate that project. Finally, another meeting which would be useful for Messrs. Taylor, Chatterjee and myself would be with Mr. Knowland, who is on Mr. Fodi's staff in the USAID office in Bangkok. As Mr. Chatterjee's time will be limited (he will have to spend a lot of time at RFD identifying the inputs necessary for the project, and their costs), I should be obliged if the two meetings where I suggest that he accompany Mr. Taylor and myself, i.e. with UNDP/FAO and with USAID, could take place consecutively.

We have not yet received the curriculum vitae which NEA is

going to send us of possible Thai candidates for the posts of rural sociologist and agroforester on the mission, but a bit nearer to the time of arrival of the mission, when this matter has hopefully been settled, I wonder if you would please ask them to meet us if possible, in the Hyatt Central Plaza Hotel at about 5 p.m. on Sunday, June 15, when we are preparing to meet as a team to discuss and plan our work. We would like to meet them in Bangkok at least to begin with so that we can plan our work together.

Second Week (Field Trip to Northeast)

I think it would be particularly useful for the mission to visit the following:

1. The UNDP/FAO project "Development of Diversified Forest Rehabilitation, Northeast Thailand" in the Khao Phoo Luang National Forest Reserve, which I had the privilege of visiting during my own field trip in February this year.

2. Tree-farmers in the Northeast Region. For example Mr. Pairote Pathranarakul of your staff mentioned one such tree-farmer to me in March, a Mr. Viroj in Khon Kaen Province.

3. The office at the Khon Kaen pulp and paper mill which is responsible for wood supply.

4. Some of the woodlots established under the old USAID project.

5. The species and agroforestry trials at the RFD research station in Kandrarom District of Srisaret Province.

6. The Australian-supported Tung Kula Ronghai Phase IV project. When I was there in February I was told that the project distributed 100.000 seedlings to the private sector last year, and is expecting to distribute 200,000 this year. It would be useful to know more about what species (only E. camaldulensis?) are distributed, to what categories of people (big farmers, small farmers, city entrepreneurs?), and for what type of planting (woodlots, single trees, windbreaks?).

7. Buddhist monastery or temple leaders, to tell them about the proposed project and to ask for their support in the extension work. During my February field trip I was very impressed by the fact that the temple forests are often the only ones that are still preserved even in devastated areas like the Tunk Kula Ronghai, and I think that the lesson for the project is to strive to get the support of the Buddhist priests. I know from the rural sociologist's report in "The Village Woodlot: Its Implementation in Thailand," 1984, that they did support the treeplanting activities of that project.

8. The Japanese-supported center in Pakthono Chai District, Nakhon Ratchasima Province, for research and training in the establishment and maintenance of tree plantations.

9. RFD officers who would be responsible for implementing the proposed fuelwood project.

10. Last but not least, we would of course like to meet the consumers of fuelwood and charcoal and the people who will hopefully undertake the treeplanting which would be encouraged under the project.

Of course we also would be interested in any other places or people that you feel we should see in the Northeast. To fit in all of this, we should perhaps leave Bangkok on Sunday 22 June, if that is possible?

Third Week (Bangkok)

During that week we would finish our data-collection and formulate our preliminary findings, proposals and recommendations, and we could present these at a wrap-up meeting for example on Friday, July 4, in order to get your comments. The best would probably be if we could meet with both RFD and NEA at that meeting so that we can have a joint discussion.

Before I leave Bangkok I think I should also inform the NESDB and DTEC of the mission's findings.

I am sorry to burden you with all this, but our time in Thailand will be rather limited; in order to get the most out of it, pre-planning is essential, and I feel that you and your Division are the best qualified for that.

Thank you once more for the valuable help,

Yours sincerely,

Mikael Grut
Energy Strategy and Preinvestment Division I

cc: Mr. Sompongse Chantavorapap
Director, Energy Research and Development Division
National Energy Administration
Kasatsuk Bridge
Bangkok 10500,
Thailand

Attachment

INT 83/005

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

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Cable Address: INTBAFRAD
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April 28, 1986

Mr. Ingvar Karlen
Director
BITS
Fredsgatan 2
S-111 52 Stockholm
Sweden

Subject: THAILAND - ESMAP Biomass Energy Preinvestment Studies
Activity Initiation Briefs

Dear Mr. Karlen:

During his recent visit to Stockholm, Mr. Robin Bates furnished you with a number of proposals for ESMAP activities which we would like to undertake during the coming months. To follow up on his visit, I am pleased to attach for your consideration two further ESMAP Activity Initiation Briefs for which we would welcome Swedish support.

The attached Activity Initiation Briefs outline two activity proposals in the area of biomass production and use in Thailand to be implemented under the joint UNDP/World Bank Energy Sector Management Assistance Program (ESMAP). Although these two activities are designed to be implemented separately, their background and objectives are closely linked. The first covers the preparation of a demonstration fuelwood project for the Northeast Region which could help to lay the basis for an expanded program of social forestry in the country. The second activity addresses the issues of woodfuel conversion and utilization efficiency by preparing a program to accelerate the dissemination of improved cooking stoves and charcoal kilns.

Both activities were identified as a high priority for follow-up in the 1985 ESMAP report "Thailand: Rural Energy Issues and Options," which concluded that despite widespread switching to modern fuels, the supply/demand imbalance for woodfuels would worsen over the next twenty years unless urgent action was taken to increase wood supply and to manage demand through more efficient conversion and utilization of wood and charcoal. Following these recommendations, the Government of Thailand through the National Energy Administration (NEA) and the Royal Forestry Department (RFD), requested ESMAP assistance in preparing specific action programs to address these issues. In response to this request, an ESMAP reconnaissance mission visited Thailand in March 1986, to discuss the precise objectives, scope and modus operandi for the proposed ESMAP activities. The attached Activity Initiation Briefs reflect the agreements reached on these issues with the concerned agencies.

As regards cost, the fuelwood project preparation study is expected to require a total of US$225,000 while the improved charcoal stove and kiln preparation study will cost about US$150,000. Both activities are planned to be initiated in June of this year, to take advantage of field conditions before the heavy rainy months.

Given the high priority attached to these activities by the Government of Thailand, we are eager to initiate this work in accordance with the above timetable. I would therefore be grateful for an early indication of the possibility of your supporting part of the costs of the proposed work.

Sincerely yours,

Masood Ahmed
Deputy Division Chief
Energy Strategy and Preinvestment
Division I
Energy Department

Attachments

cc: Messrs. B. Montfort, R. Bates, M. Grut (EGYS1);
Ms. K. Sharkey (EGYS1)

Mr. Hume OK

INT/83/005

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April 28, 1986

Mr. Jorma Paukku
FINNIDA
Box 276
00171 Helsinki 17
Finland

Subject: THAILAND - ESMAP Biomass Energy Preinvestment Studies
Activity Initiation Briefs

Dear Mr. Paukku:

During his recent visit to Helsinki, Mr. Robin Bates furnished you with a number of proposals for ESMAP activities which we would like to undertake during the coming months. To follow up on his visit, I am pleased to attach for your consideration two further ESMAP Activity Initiation Briefs for which we would welcome Finnish support.

The attached Activity Initiation Briefs outline two activity proposals in the area of biomass production and use in Thailand to be implemented under the joint UNDP/World Bank Energy Sector Management Assistance Program (ESMAP). Although these two activities are designed to be implemented separately, their background and objectives are closely linked. The first covers the preparation of a demonstration fuelwood project for the Northeast Region which could help to lay the basis for an expanded program of social forestry in the country. The second activity addresses the issues of woodfuel conversion and utilization efficiency by preparing a program to accelerate the dissemination of improved cooking stoves and charcoal kilns.

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Sincerely yours,

Masood Ahmed
Deputy Division Chief
Energy Strategy and Preinvestment
Division I
Energy Department

Attachments

cc: Messrs. B. Montfort, R. Bates, M. Grut (EGYS1);
Ms. K. Sharkey (EGYS1)

Mr. Hume OK

INT/83/005

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April 28, 1986

Dr. Prapath Premmani
Secretary-General
National Energy Administration
Kasatsuk Bridge
Bangkok 10500, Thailand

Dear Dr. Prapath:

We would like to thank you for your letter dated March 11, 1986, in which you reconfirmed your government's request for assistance from the joint UNDP/World Bank Energy Sector Management Assistance Program (ESMAP) to prepare a fuelwood supply project and a program to accelerate the dissemination of improved stoves and charcoal kilns. We also would like to use this opportunity to express our appreciation for your and your staff's support and cooperation extended to Messrs. Ahmed, Grut and Terrado who recently visited Thailand to discuss with the National Energy Administration (NEA) as well as with other agencies concerned a priority follow-up work program to the Thailand Rural Energy Assessment. As agreed during this ESMAP mission we have worked out in more detail the designs for the two above-mentioned ESMAP activities as outlined in the two attached activity initiation briefs.

One of these briefs covers the proposed "Fuelwood Project Preparation." The objective of the activity is to assist the Government in preparing a fuelwood project with special focus on private sector tree planting -- a project that could eventually be replicated on a larger scale. As agreed, the target area for this initial fuelwood project will be the Northeast Region. The proposed activity will result in a project preparation document that can serve as a satisfactory basis for appraisal by an interested donor and in the build-up of local expertise in fuelwood project planning.

The second brief attached covers the proposed "Accelerated Dissemination of Improved Stoves and Charcoal Kilns." This activity -- as agreed -- is to prepare a long term strategy for accelerating the dissemination of improved cooking stoves and charcoal kilns focussing on private sector involvement and a program of action for an initial time slice of about five years. The findings and recommendations of this exercise will be reflected in a project preparation document that can be used as a basis for appraisal by any interested donor agency and/or actions by the Government.

While for details on these activities' background, schedule and draft terms of reference of ESMAP staff and consultants we refer to the attached documents, we would like to bring two issues to your attention:

(a) As you will see from the attached activity briefs, the costs of these activities are likely to be higher than originally expected, which is mainly because of special consultancy services required to achieve the activities' envisaged objectives. The fuelwood project preparation is expected to require about US$235,000 and the preparation of the stove/kiln dissemination program about US$160,000.

In this context, we have approached potential donors for financial support to carry out the proposed work under ESMAP. You will be pleased to learn that the European Economic Community (EEC) has already indicated some interest in partly financing this work and it would be very useful if you could send a letter to the local EEC delegation office asking for their speedy consideration of the request for financial support. In view of the urgency of this matter -- to be able to initiate the activities, as suggested in June this year -- we have already forwarded copies of the attached activity proposals to the EEC and also to the Belgian and Netherlands Governments which have expressed potential interest.

(b) As you may notice from the attached documents, we would like to use some local consulting expertise for both activities. In particular, we would like to use the services of the following Thai experts: (i) Forestry Project Preparation: an Agroforestry Specialist and a Rural Sociologist; (ii) Stove/kiln Dissemination: a Socio-Economist/Sociologist and a Stove Marketing Associate. The draft terms of reference for these consultants are attached to the respective activity initiation briefs. As discussed earlier, we would be most grateful if you could assist us in identifying these consultants and look forward to receiving resumes of potential candidates in the near future.

We hope that the Royal Forestry Department has been able to conduct the survey for identifying priority areas for private tree planting in the Northeast as agreed upon during the recent ESMAP mission. The results of this survey are of great importance for the fuelwood project preparation and need to be available before fielding the forestry mission in June.

In view of their interest in this matter we are sending copies of this letter to the Department of Technical and Economic Cooperation and the Fiscal Policy Office in the Ministry of Finance as well as to the National Economic and Social Development Board.

We are looking forward to hearing from you.

Sincerely,

Best regards -

for

Bernard Montfort
Division Chief
Energy Strategy and Preinvestment
Division I
Energy Department

Attachments

cc: Department of Technical and
Economic Cooperation
Ministry of Finance
NA Pralan Road
Bangkok 10200, Thailand

Mr. Khun Manas Lee Viraphan
Director General
Fiscal Policy Office
Ministry of Finance
NA Pralan Road
Bangkok 10200, Thailand

Mr. Snoh Unakul
Secretary General
National Economic and
Social Development Board
962 Thanon Krung Kasem
Bangkok 10100, Thailand

cc and cw: Messrs. Ahmed (AEASE); Ahmed (EGYS1)

cc: Messrs. Nayyar/Albuoy (AEPEN); Saunders/Terrado (EYGPA);,
Grut/Frueh (EGYS1)

Hermans/Jechoutek, Resident Mission, Bangkok, Thailand

BFrueh:dap

INT 183/005

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

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April 28, 1986

Mr. Børge V. Blønd
Head of Department
Ministry of Foreign Affairs
Danish International Development Agency
Asiatisk Plads 2
DK-1448 Copenhagen K
Denmark

Subject: THAILAND - ESMAP Biomass Energy Preinvestment Studies
Activity Initiation Briefs

Dear Mr. Blønd:

During his recent visit to Copenhagen, Mr. Robin Bates furnished you with a number of proposals for ESMAP activities which we would like to undertake during the coming months. To follow up on his visit, I am pleased to attach for your consideration two further ESMAP Activity Initiation Briefs for which we would welcome Danish support.

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Sincerely yours,

Masood Ahmed
Deputy Division Chief
Energy Strategy and Preinvestment
Division I
Energy Department

Attachments

cc: Messrs. B. Montfort, R. Bates, M. Grut (EGYS1);
Ms. K. Sharkey (EGYS1)

Mr. Hume OK

FORM NO. 27 - OCR
(3/82)

WORLD BANK OUTGOING MESSAGE FORM Cable, Telex

IMPORTANT—PLEASE READ INSTRUCTIONS BELOW BEFORE TYPING FORM

F338 INT/83/065

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PAGE 1 OF 2

OFFICIAL DEPT/DIV ABBREVIATION: EGYS1

MESSAGE NUMBER

TEST NUMBER (FOR CASHIER'S USE ONLY)

START HERE

INTBAFRAD, OUAGADOUGOU, BURKINA. ATTN: ANDREW ROGERSON, RESREP. RE: ESMAP REPORT ON TECHNICAL ASSISTANCE PROGRAM FOR BURKINA ENERGY SECTOR. (ONE) WE ARE SENDING THROUGH UNDP DIPLOMATIC POUCH (LEAVING FRIDAY, APRIL 25TH) 135 COPIES OF ABOVE REPORT. TWENTY-FIVE COPIES ARE FOR BANK RESIDENT MISSION. PLEASE FORWARD TEN COPIES TO UNDP RESIDENT REPRESENTATIVE. PLEASE DELIVER COVER LETTER AND FIVE COPIES TO EACH OF THE GOVERNMENT AGENCIES LISTED IN THE COVER LETTER AND AGREE WITH MINISTRY OF PLAN ON ARRANGEMENTS FOR DISTRIBUTION OF REMAINING COPIES. PLEASE FEEL FREE TO GIVE COPIES TO LOCAL REPRESENTATIVES OF OTHER AGENCIES IF THEY ARE INTERESTED. YOU COULD ALSO LET THEM KNOW STATUS OF FUNDING AND EXECUTION -- AS OUTLINED IN POINT THREE OF OUR FEBRUARY 21 TELEX TO YOU. (TWO) RE OUAGA II DIESELS: THANKS FOR FOLLOWING UP WITH SONABEL. AS INDICATED IN MR BAUER'S MARCH 31 TELEX WE HOPE TO HAVE A RESPONSE FOR SONABEL AS SOON AS LEGAL DEPARTMENT HAS BEEN CONSULTED. (THREE) RE START-UP OF ESMAP URBAN HOUSEHOLD ENERGY PROJECT: GOVERNMENT HAS NOT YET REPLIED TO POINT DDD OF OUR FEBRUARY 21 TELEX. PLEASE CHECK

END OF TEXT

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PAGE 2 OF 2

OFFICIAL DEPT/DIV ABBREVIATION: EGYS1

MESSAGE NUMBER

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WITH MINISTRY OF PLAN AND INDICATE THAT MOST SUITABLE TIMING FOR US NOW APPEARS TO BE JUNE. THANKS YOUR ASSISTANCE. REGARDS, BERNARD MONTFORT, CHIEF, ENERGY STRATEGY AND PREINVESTMENT DIVISION I, INTBAFRAD.

END OF TEXT

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CLASS OF SERVICE: Telex

TELEX NO.:

DATE: 4/25/86

SUBJECT: BURKINA: Technical Assistance

DRAFTED BY: DCraig:na

EXTENSION: 76980

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CC: Messrs. Hinkle, Daily (WA1)
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Ms. Jonas (WA1)

AUTHORIZED BY (Name and Signature): BernardMontfort, Division Chief, EGYS1

DEPARTMENT: Energy

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le 25 avril 1986

INT/83/005

F.338

Son Excellence Monsieur le Ministre
de la Planification et
du Développement Populaire
Ouagadougou, Burkina Faso

OBJET: Burkina Faso - Programme d'Assistance Technique ESMAP

Monsieur,

J'ai l'honneur de vous transmettre aux bons soins de notre Représentant Résident plusieurs exemplaires de la version finale du Programme d'Assistance Technique ESMAP pour le secteur de l'énergie au Burkina.

Comme vous le savez, la coopération entre le Burkina et les programmes PNUD/Banque Mondiale dans le secteur énergétique a commencé en septembre 1984 sous forme de l'élaboration commune d'une étude sectorielle. Celle-ci a été l'objet des discussions lors d'une mission effectuée à Ouagadougou par M. Craig et Mme. Muller en octobre 1985 et l'étude se trouve en version finale depuis janvier 1986.

Au cours de la mission d'octobre 1985 les deux parties ont examiné les recommandations de l'étude sectorielle en vue de préciser les besoins essentiels en assistance technique du secteur énergétique au Burkina. Ce travail a mené à un rapport dont la version provisoire vous a été communiquée en janvier 1986. Le texte final du rapport a été établi par un échange de télex pendant le mois de février 1986. Les besoins d'assistance technique présentés dans le rapport sont donc le résultat d'une réflexion commune qui s'est précisée progressivement au cours des derniers dix-huit mois; le rapport se veut un des principaux moyens pour mettre en oeuvre les recommandations de l'étude sectorielle.

Comme nous l'avons signalé (notre télex du 21 février), les trois premiers projets du programme pourraient en principe être exécutés par le programme ESMAP, à savoir: le projet d'énergie des ménages urbains, comprenant la promotion des foyers ameliorés et du kérosène et l'appui à la politique forestière; l'aide à la gestion du secteur pétrolier; et le diagnostic de la centrale à fuel de Ouaga 2. Tout bailleur de fonds aurait l'option de financer un de ces trois projets par l'intermédiaire de l'ESMAP.

Nous avons l'honneur de vous informer que la Norvège s'est déclarée prête à financer, par l'intermédiaire de l'ESMAP, la phase I du projet d'énergie des ménages urbains et éventuellement au moins un des volets de la phase II. Nous sommes donc en mesure de lancer ce projet dès que nous

aurons reçu votre accord. Au cas où cela vous conviendrait, nous vous enverrions les deux consultants pour la phase I en juin.

Nous continuons à rechercher activement les financements nécessaires afin de réaliser les deux autres projets prioritaires. En ce qui concerne le deuxième projet (l'aide à la gestion du secteur pétrolier), nos démarches seraient peut-être facilitées par une demande officielle émanant soit du gouvernement soit de la SONABHY. Quant au troisième projet (le diagnostic de la centrale à fuel de Ouaga 2), nous espérons pouvoir vous répondre très prochainement.

Nous souhaitons que la coopération entre le Burkina et le programme ESMAP du PNUD/Banque Mondiale se poursuivra en vue de préparer à moyen terme des projets prioritaires d'investissement dans le secteur de l'énergie. Nous attendons votre réponse concernant le lancement des activités citées ci-dessus.

Veuillez agréer, Monsieur le Ministre, l'expression de ma très haute considération.

Bernard Montfort
Chef de Division
Energie Stratégique et
Pré-investsisement Division I
Département d'Energie

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Bernard Montfort
Chef de Division
Energie Stratégique et
Pré-investsitisement Division I
Département d'Energie

copie à:

Monsieur le Directeur
l'Institut Burkinabè de l'Energie

Monsieur le Secrétaire-Général
le Ministère de l'Environnement et du Tourisme

Monsieur le Directeur-Général
la Société Nationale Burkinabè d'Hydrocarbures

Monsieur le Directeur-General
la Société Nationale d'Electricité du Burkina

Monsieur le Représentant Résident de la Banque Mondiale
à Ouagadougou

Monsieur le Représentant Résident du PNUD à Ouagadougou

copie à et accord de:

Bernard Montfort, Chef
Division I de Stratégie Energétique et de Pré-Investissements

Francois Bauer, Chef
Division de l'Energie en Afrique de l'Ouest

Jamaica Assessment

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April 24, 1986

INT|83|005

Mr. Stephen L. Feldman
Director
University of Pennsylvania
Energy Center
127 Meyerson Hall
210 South 34th Street
Philadelphia, PA 19104-6311

Dear Mr. Feldman:

I refer to our recent meeting when we discussed our proposed ESMAP program in Jamaica, the Energy Center's ongoing institutional support for the Ministry of Energy and Tourism (MMET) and your overall familiarity with AID Energy Sector Programme.

As we discussed, the ability of the Energy Division and other ministries to follow-up the proposed ESMAP programm is a key issue in its design. We would therefore welcome your comments on the MMET proposal, both substantive and institutional. You already have a copy of the Ministry's proposal (letter of March 17, 1986) and we now enclose a copy of the original Assessment Report as background.

We plan to prepare TOR for the program in the next week or so and go down to Jamaica around May 11. Perhaps you would let us know whether you would be available at that time, should that be necessary.

Sincerely,

Christopher R. Poncia
Energy Department

Encl.

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April 24, 1986

INT|83/005

Mr. Andrew Hunter
Petroleum Industry Research Associates
122 East 42nd Street
New York, NY 10168

Dear Andrew,

I enclosed a new version of your report of March 24, 1986 which I have revised presentationally but without substantive change in analysis or conclusions.

I would appreciate any comments.

Sincerely,

Christopher R. Poncia
Energy Department

Encl.

cc: Messrs. Iskander, Nayar o/r (EGYD2), Bates, de Capitani (EGYS2)

CRPoncia:cah

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April 24, 1986

INT|83/001

Mr. S. J. Webster
Coopers & Lybrand Associates Ltd.
Plumtree Court
London EC4A 4HT
ENGLAND

Dear Mr. Webster:

Thank you for your letter of April 11 outlining your UK experience on supply to the grid system of privately generated electricity.

We are currently defining the scope of the proposed Jamaica cogeneration study, including the various types of suppliers and the potential level of supply. A visit to Jamaica will be scheduled shortly. If I may, I will get back to you after my return.

Sincerely,

Christopher R. Poncia
Energy Department

cc: Messrs./Mmes. Hume (EGYPS), Voyadzis, Bernard o/r (LC2VC), Larrieu (LCPEN), Bates, Schmedtje (EGYS2), Byer (EGYPA), Iskander, Nayar o/r (EGYD2) de Capitani (EGYS2)

CRPoncia:cah

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT | 80 | 009
INT | 83 | 005

DATE: April 24, 1986

TO: Mr. Alberto de Capitani, Division Chief, EGYS2

FROM: Christopher R. Poncia, EGYS2 CRP

EXTENSION: 7-5284

SUBJECT: JAMAICA - Energy Assessment Supplement and ESMAP Programme

1. Mr. Voyadzis called this morning. In view of current sensitivities on the macro-economic front, he would prefer to delay delivery of the report until review by EAPEG by Tuesday evening, next week. I will request Ms. Bernard not to deliver the current draft.

2. I spoke yesterday to Jorge Larrieu regarding electricity supply to JPS under the Clarendon scheme. Jorge says LCPEN has major problems as to whether the Clarendon proposal is consistent with the least cost investment program. I am working with him on the design of the cogeneration study generally (industry and agriculture) and will sort this out before ESMAP mission departure. In the meantime, I attach a copy of my letter of today to Coopers to put them "on hold".

3. I spoke last week to Ms. Demers (Jamaica desk officer) of CIDA who confirmed that CIDA would be willing to meet the external costs of both the Energy Assessment Supplement and the ESMAP Programme up to the previous indicated amount of Can$610,000. I will write to confirm this when we have developed the budget, at which time I will also raise the question of whether our internal costs can be included as well, if the budget permits.

cc: Messrs./Mmes. Hume (EGYPS) Voyadzis, Bernard o/r (LC2VC), Larrieu (LCPEN), Bates, Schmedtje (EGYS2), Byer (EGYPA), Iskander, Nayar o/r (EGYD2)

CRPoncia:cah

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le 23 avril 1986

9NTT/83/005

M. Paul L. Frix
Premier Attaché
chargé de la Coordination des Politiques
Direction Générale de la
Planification Géographique et Sectorielle
Building "A.G."
Place du Champ de Mars 5
Bte. 57
1050 Bruxelles
Belgique

Cher Monsieur,

Suite à notre réunion du 7 mars dernier à Bruxelles, je tiens à vous remercier pour votre accueil ainsi que pour l'intérêt que vous avez marqué à l'égard de nos programmes PNUD/Banque Mondiale concernant l'énergie (ESMAP).

Il apparaît ainsi que nous pouvons envisager une meilleure coordination entre nos activités multilatérales et vos propres programmes d'aide bilatérale. Comme vous me l'avez indiqué, vous pensez pouvoir faire approuver par le Gouvernement belge une contribution financière à nos programmes ESMAP et nous serions très intéressés à connaître le résultat de votre démarche dans ce sens. A ce propos, le principe d'affecter un certain pourcentage (30% par exemple) de la contribution belge à nos fonds propres serait particulièrement apprécié, par la flexibilité que cela nous procurerait dans la conduite de nos opérations.

De notre côté nous pourrions utiliser votre contribution dans le groupe de pays cible que vous avez spécifié (Zaire, Rwanda, Burundi, Côte d'Ivoire, Niger, Sénégal, Maroc, Thailande, Indonésie) et dans des types d'activités satisfaisant vos critères (maîtrise de l'énergie dans l'industrie et le secteur domestique, énergies éolienne et solaire, production d'électricité à partir de biomasse, production de charbon de bois, foyers améliorés). Nous nous efforcerions par ailleurs d'utiliser les services des consultants belges sur l'ensemble de nos programmes ESMAP plutôt que sur des activités ponctuelles identifiées à l'avance.

Nous sommes à votre disposition pour tout renseignement complémentaire dont vous pourriez avoir besoin. En attendant des échanges de vue plus détaillés sur nos programmes respectifs, je me permets de vous signaler, à titre indicatif, deux des activités pour lesquelles les critères que vous avez formulés pourraient s'appliquer et justifier ainsi une assistance financière de votre pays:

1. Thailande. Vous pourrez trouver ci-joint des documents plus détaillés que ceux fournis à Paris sur deux activités ESMAP concernant la production de bois d'une part et l'utilisation de charbon de bois dans des foyers améliorés d'autre part. Comme indiqué dans ces documents, le

coût total de ces activités est estimé à E.U.$ 325.000, non comprise la participation de personnel thailandais assurée par les organismes intéressés (National Energy Administration et Royal Forestry Department). Nous pensons obtenir un financement partiel de la CEE mais aurons besoin d'un complément qui pourrait avantageusement être couvert par votre pays. C'est au cours des trois prochains mois que nous espérons démarrer ces activités et il nous serait très utile d'être informés assez rapidement sur l'appui financier que vous pourriez apporter.

2. Zaire. Une mission est actuellement à Kinshasa pour discuter de la version finale du rapport d'évaluation avec le gouvernement zairois. A ce stade-ci, nous prevoyons de lancer une activité ESMAP dans le domaine de la maîtrise de l'énergie. Nous aurons besoin d'un cofinancement pour mettre en oeuvre les activités ESMAP dans ce pays et au cas où une participation vous intéresserait, je suggère que Madame Lienard contacte mon collègue Alberto de Capitani vers le début mai. A ce moment-là, il disposera d'informations supplémentaires sur les accords conclus avec le gouvernement zairois.

Dans l'attente de vous lire, je vous prie de croire, cher Monsieur Frix, à l'expression de mes sentiments les meilleurs.

Bernard Montfort
Chef de division
Preinvestissement et stratégie
énergétique division I
Département Energie

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Bernard Montfort
Chef de division
Preinvestissement et stratégie
énergétique division I
Département d'Energie

cc: Messrs. Rothermel, Cox (UNDP, New York)

BMontfort:na

THAILAND: ESMAP Biomass Energy Preinvestment Studies
Activity Initiation Briefs

You will find attached two Activity Initiation Briefs (AIB) for ESMAP preinvestment studies that are proposed in the area of biomass energy production and use. Although these two activities are designed to be implemented separately, their background and objectives are closely linked. The first covers the preparation of a demonstration fuelwood project for the Northeast Region which could help to lay the basis for an expanded program of social forestry in the country. The second activity addresses the issues of woodfuel conversion and utilization efficiency by preparing a program to accelerate the dissemination of improved cooking stoves and charcoal kilns.

Both activities were identified as a high priority for follow-up in the 1985 ESMAP report "Thailand: Rural Energy Issues and Options," which concluded that despite widespread switching to modern fuels, the supply/demand imbalance for woodfuels would worsen over the next twenty years unless urgent action was taken to increase wood supply and to manage demand through more efficient conversion and utilization of wood and charcoal. Following these recommendations, the Government of Thailand through the National Energy Administration (NEA) and the Royal Forestry Department (RFD), requested ESMAP assistance in preparing specific action programs to address these issues. In response to this request, an ESMAP reconnaissance mission visited Thailand in March, 1986, to discuss the precise objectives, scope and modus operandi for the proposed ESMAP activities. Agreement has now been reached on these issues with the concerned government agencies. The attached AIB's reflect these discussions and incorporate informal comments received from concerned staff in the World Bank.

The next step is to forward them to the Thai Government agencies involved for their review and to enable them to begin the preparatory work. Thereafter, missions are planned for both activities in June, 1986, to take advantage of field conditions before the heavy rainy months. The fuelwood project preparation study will also require a second mission in November to complete the data gathering and field analysis.

As regards cost, the fuelwood project preparation study is expected to require a total of $225,000 while the improved charcoal stove and kiln preparation study will cost about $150,000. Co-financing for these activities is currently sought.

THE WORLD BANK INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

Jan-Energy Sector
NRIC
INT|80|009

DATE: April 22, 1986

TO: Messrs. I. Hume, EGYPS and S. Voyadzis, LC2VC

THROUGH: A. de Capitani, Chief, EGYS2

FROM: Christopher R. Poncia, EGYS2

EXTENSION: 7-5284

SUBJECT: JAMAICA: Petroleum Procurement, Refining and Distribution

1. Further to my memo of April 21, I have now spoken to Ms. Connie Bernard in Jamaica and, briefly, to Mr. Trevor Byer.

2. Ms. Bernard was satisfied with the contents of the draft report except for paras. 1.1 and 1.2 of the Introduction. We agreed to suggest to you the following changes:

(a) delete the last sentence of para. 1.1;

(b) para. 1.2 to read:

"Para.1.2 Subsequent to publication of the Report, GOJ initiated further discussion on the sections dealing with Jamaica's petroleum procurement, refining and distribution sub-sector. As a result of those discussions, it was agreed that the Bank would supplement the Assessment Report by a detailed review of this sub-sector, in the light of the comprehensive data which GOJ and Petroleum Corporation of Jamaica (PCJ) made available. The findings of this review, which took place in February 1986 again under the joint UNDP/World Bank Energy Sector Assessment Programme, are set out in this Report."

3. Mr. Byer suggested reference to the need to maintain continuous monitoring of the situation. I therefore agreed in principle with Ms. Bernard the addition of a new para. 7.8 at the end of the Report, page 42, reading as following:

"Para. 7.8 The conclusions reached in this Report are based on prevailing conditions as they affect Jamaica's petroleum procurement, refining and distribution sub-sector. Close monitoring by GOJ of the future evolution of these conditions is required to ensure the effective exploitation of cost savings opportunities as they arise and to verify that the economic costs of the present system continue to remain comparable with the alternative of direct product importation. It is therefore recommended that GOJ should undertake this monitoring through the Energy Division of the MMET, in conjunction with PCJ, and should ensure that adequate resources are made available to the Energy Division for this purpose."

4. If you agree, I will telex the amendments to Ms. Bernard. She would then incorporate them in the report before delivering it to Minister Hart and Mr. Saunders.

Distribution

Messr/Mmes: Iskander, Nayar (EGYD2), Schmedtje, Bates, Byer (EGYPA), Bernard (LCZVP)

CRPoncia:cah

INIT/83/005
4/22/86

Back to office report

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

DATE: April 22, 1986

TO: Mr. Alberto de Capitani, Division Chief, EGYS2

FROM: Ignacio Rodriguez, EGYS2 IR

EXT: 7-4546

SUBJECT: ESMAP: PARAGUAY - Supervision of Technical Assistance Project
Back-to-Office Report

1. In accordance with my terms of reference, I visited Paraguay on April 1-5 to supervise the above mentioned energy planning technical assistance project. The Paraguay Energy Assessment, (October 1984), identified the need to achieve better coordination of overall energy policies as a priority issue in the country. As a first step in this direction, an ESMAP project, financed by the UNDP country account, was initiated in September 1985 to strengthen the Energy Unit of the Secretaría Técnica de Planificación (STP) to carry out technical and economic analyses for the National Energy Commission (NEC). The assessment mission concluded that an indispensable component of the NEC would be a strong Energy Unit in the Secretaría Técnica de Planificación.

2. The project is going very well, with the work being carried out near schedule. One point which was emphasized to the Government, is the need to improve the dialogue between the STP and the institutions involved in the energy sector. With the work achieved by the project, STP is already in a better position to improve its institutional role. An effective step is for the management of STP to present the preliminary energy balance to the heads of the energy related institutions. A formal Bank/UNDP/STP presentation of all completed work to the NEC group could follow at a time near the end of the project.

3. This memo includes a brief discussion on the progress achieved, the expected output for the next six months, a proposal for a one year extension and the status of other projects identified in the Technical Assistance Project Report (September 1985). Attached as Annex 1, is a copy of a note left to the Director of the Secretaría Técnica de Planificación.

Progress Achieved

4. The most significant progress achieved by the project was on preparing the energy balance, carrying out a household energy survey, and setting up a computer training program to the Energy Unit staff. The completion of the energy balance, 1970-85 series, is a major step in Paraguay toward energy planning. It was the most thorough analysis carried out in the country, and will be a critical planning tool. The household energy survey was the first attempt in Paraguay to estimate household energy consumption in the country. This survey consisted of interviews to a representative sample of 1% of all households, and included not only energy consumption by type of fuel, but also household income levels and energy product pricing. With respect to computer training to the Energy Unit staff, this will make possible the setting up of a data base in the next part of the project.

Expected Output

5. The major objectives in the next six months are to execute training internships in Brazil, set up a solid data base, and carry out a price analysis. The purpose of the internship program is to send five members of the Energy Unit to selected companies in Brazil (Electrobas, Petrobas, Pro-alcohol, COPPE) for a duration of 15-30 days. Along with setting up a data base, which will be essential for all analyses, a quarterly energy data publication will be made available to the interested energy agencies. The Energy Unit team will also carry out a price analysis, which is critical in Paraguay since demand management programs in the form of interfuel pricing policies do not exist.

Extension of the Project

6. Since this project is the first attempt to address the energy issues more effectively under one central organization, it is crucial to continue supporting the Energy Unit. This was emphasized when the project was conceived. There is an urgent need to further analyze the information collected, establish adequate econometric models, set up an energy economics seminar to the Energy Unit staff, and develop a first National Energy Plan. The total cost for the second-phase is estimated at US$95,000, with a project duration of one year. UNDP has expressed interest in financing 50%.

Status of Other Projects

7. There were six other projects identified in the Recommended Technical Assistance Project Report (September 1985). Three wood related projects (wood stoves, sawmill waste, and charcoal) have been taken by the German Technical Assistance (GTZ), and a petroleum exploration promotion related project is on hold to be possibly carried out by the Inter-American Development Bank (IDB). Due to the relatively short lead time required for activities to be implemented under ESMAP, the Government is expressing interest for the first phase of the petroleum project to be executed instead by EGYS2. The Government will notify us its decision in about three months. The remaining two projects which deal with electric power, will be implemented by the State Electric Power Agency (ANDE) in their own terms.

Attachment

cc: Messrs. Jenning, Moscote (LCP);
Carneiro, Zea Barriga (LC2);
Meo, Landau (LC1);
Pfeffermann, Jaspersen (LCNVP);
Weissman (EISVP);
Kohli, Gamba (IND);
Hume, Saunders, Iskander, Dosik,
Montfort, Sanchez-Sierra (EGY);
Harland, Rothermel/Cox (UNDP, New York);
Chang, Fuentealba (UNDP, Asuncion, Paraguay);
EGYS2 Higher Level Staff

Mmes. Marshall (LC2); Haug (IND); Javier (LC2PB)

IRodriguez:svh

PRESIDENCIA DE LA REPUBLICA
Secretaría Técnica de Planificación

MEMORANDUM

M.E. Nº 34

A : DR. FULVIO MONGES OCAMPOS, Secretario Ejecutivo

DE : IGNACIO RODRIGUEZ, Supervisor Banco Mundial del PAR/85/003
ISAAC CASTILLO, Experto Residente del Banco Mundial PAR/85/003

ASUNTO: Referirse al proyecto PAR/85/003

FECHA : 3 de abril de 1986

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1) Aprovechando la visita de supervisión de mitad de proyecto, realizada por el Banco mundial entre el 1 y 5 de Abril del presente, cumplimos en informarle del desarrollo del proyecto y de sus proyecciones futuras.

De acuerdo al cronograma de actividades establecido en el documento de proyecto, le resumimos a continuación los trabajos realizados hasta el 30 de marzo de 1986:

a. La finalización de los balances energéticos, serie histórica 1970-1985. Documento que condensa toda la información de producción transformación y consumo de energía en el Paraguay y que será publicado el próximo mes de mayo. Dado el momento crítico que vive el país, luego de las transformaciones generadas por el proceso de inversión de las grandes hidroeléctricas, esta publicación cobra magnitud, pues constituye el 1º paso y la base sobre el cuál descansará todo el proceso de planificación energética.

b. La realización de una encuesta por muestreo, para estimar el consumo de leña y carbón vegetal. Que es la primera en el país y que servirá de base para elaborar un estudio más detallado sobre las llamadas fuentes no comerciales de energía. Los resultados de este estudio serán, también de gran ayuda para futuros proyectos de utilización de la biomasa como fuente de energía.

c. El entrenamiento del personal nacional en el uso y técnicas de computación con

el fín de establecer a corto plazo un sistema de información energética, que pueda producir informaciones periódicas, útiles para inversionistas e industriales.

Prosiguiendo con el programa de trabajo, en los próximos 6 meses que restan del proyecto, serán realizadas las siguientes actividades:

* El entrenamiento de 5 funcionarios de la división de energía, en un programa de pasantías en distintas empresas energéticas del Brasil, quienes a su regreso prepararán un informe sobre el trabajo realizado.

* La organización de una base de datos automatizada del sector energía.

* La realización de un estudio de precios de la energía que pueda determinar el papel de los precios en la formación de la demanda y oferta de energía.

2) Deseamos manifestarle, la plena satisfacción por parte del Banco Mundial de los resultados hasta ahora alcanzados por el proyecto; y de la capacidad alcanzada por el grupo nacional de trabajo. Sin embargo deseamos manifestarle nuestra inquietud acerca de los aspectos interinstitucionales relacionados con el proyecto. Somos conscientes de la complejidad del problema institucional del sector energía en el Paraguay y sabemos que la solución es un trabajo a largo plazo; sin embargo consideramos indispensables que la Secretaría Técnica de Planificación inicie cuanto antes acciones tendientes a mejorar las relaciones de trabajo con las otras instituciones involucradas en el sector de energía

Nos permitimos sugerirle que la presentación de la versión preliminar de los balances energéticos a los presidentes o ministros de las entidades públicas mayormente involucradas en el sector energía, ofrece una buena oportunidad para empezar esta importante tarea de acercamiento interinstitucional.

En este espiritú el Banco Mundial esta dispuesto a brindar toda su cooperación. Una misión regresará dentro de unos cuatro meses para presentar los resultados alcanzados por el proyecto a las más altas autoridades del Gobierno Nacional, con el fín de mejorar la Coordinación del Sector Energía.

c.c.: DR JERRY CHANG, Representante Residente de las Naciones Unidas
DR RENAN FUENTEALBA, Representante Residente Adjunto, PNUD.
DR GUILLERMO SOSA, Coordinador Asist. Técnica Externa - S.T.P.

LACIC

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

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INT|83|005

April 21, 1986

HRIC

Mr. John Butlin, Senior Research Fellow
Marine Resources Project,
University of Manchester
Oxford Road
Manchester M13 9PL - United Kingdom

Dear Mr. Butlin:

I am writing in response to your letter of April 4, 1986 in which you asked me for:

(a) information about the Joint World Bank/UNDP Energy Programs and for documents produced;

(b) information about our work on alternative ocean-based generating technologies in the Caribbean and in the Indian and Pacific Oceans; and

(c) any other relevant sources of information on these technologies.

There are two joint UNDP/World Bank Programs: the Energy Sector Assessment Program (ESAP), and the Energy Sector Management Assistance Program (ESMAP). Funding of these Programs is channeled through UNDP, either directly from its own resources or from donor countries; execution of the Programs is entirely the responsibility of IBRD through its own staff supplemented by consultants as required in specific areas. ESAP was initiated in November 1980 as a response by the international community, led by UNDP/IBRD, to the need of many developing countries for assistance in identifying and implementing strategies enabling these countries to adjust to an environment of high petroleum prices. ESAP was specifically designed:

(a) to enable developing countries to define country-specific energy policies and action plans, in particular with regard to the development of indigenous resources, interfuel substitution, and increased end-use efficiency;

(b) to consolidate existing data on energy supply and demand for decision-making purposes; and

(c) to be selective in choosing specific issues in full consultation and agreement with governments. The total number of countries to be covered is 70, and so far about 51 have been completed, 15 are ongoing, and 4 will be started later (see attachment 1).

While it was clear that recipient countries and donors were ready to act on the recommendations of the Assessments, additional assistance was

required to accelerate the follow-up. This was particularly true for preinvestment work in areas such as energy efficiency and power systems. In response to requests from governments for this type of follow-up assistance, ESMAP was created in April 1983. I have enclosed a copy of the 1985 Annual Report for more information regarding the scope of these programs.

Published energy assessment reports under the Joint UNDP/World Bank Energy Sector Programs have a very restricted distribution. However, I understand that a set of the energy assessment reports is available at the United Kingdom's Department of Trade and Industry in London (contact: Dr. Bryan Coleby).

We have reviewed ocean-based generation technologies in Fiji, Jamaica, Seychelles, St. Lucia, and Tonga in the energy assessments of these countries. I have attached photocopies of the relevant pages for your information. The broad conclusion is that the economic viability of these technologies (i.e., ocean thermal energy conversion and wave/tidal) has not been proven.

I have also enclosed a list of publications for your follow-up. I understand Sea Solar Power, Inc., of York, Pennsylvania is contemplating commercial ventures in the Caribbean region. If you have any further queries of a technical nature, please feel free to contact Mr. Anwer Malik of this Division (Phone: 202-477-5466).

Sincerely yours,

R.W. Bates

Robin Bates
Deputy Division Chief
Energy Strategy and
Preinvestment Division II
Energy Department

Enclosures

cc: Mrs. Westwood, Commercial Department
c/o United Kingdom Delegation Office, IMF 11-120

Attachment 1

EXECUTION OF THE ENERGY SECTOR ASSESSMENT PROGRAM

Reports Completed				Work in Progress	Possible Future Countries
	(date)		(date)		
Bangladesh	10/82	Nigeria	08/83	Angola	Djibouti
Benin	06/85	Papua New Guinea	06/82	Burkina	Dominican Rep.
Bolivia	04/83	Paraguay	10/84	Comoros	Gabon
Botswana	09/84	Peru	01/84	Congo	Sierra Leone
Burma	06/85	Portugal	04/84	Ghana	
Burundi	06/82	Rwanda	06/82	Guinea	
Cape Verde	08/84	Sao Tome & Principe	10/85	Honduras	
Costa Rica	01/84	Senegal	07/83	Madagascar	
Ecuador	12/85	Seychelles	01/84	Mali	
Ethiopia	07/84	Solomon Islands	06/83	Mozambique	
Fiji	06/83	Sri Lanka	05/82	Somalia	
Gambia	11/83	St. Lucia	09/84	Syria	
Guinea Bissau	08/84	St. Vincent	09/84	Swaziland	
Haiti	06/82	Sudan	07/83	Trinidad & Tobago	
Indonesia	11/81	Tanzania	11/84	Zaire	
Ivory Coast	04/85	Thailand	09/85		
Jamaica	04/85	Togo	06/85		
Kenya	05/82	Tonga	06/85		
Lesotho	01/84	Turkey	03/83		
Liberia	12/84	Uganda	03/83		
Malawi	08/82	Vanuatu	06/85		
Mauritania	04/85	Western Samoa	06/85		
Mauritius	12/81	Yemen A.R.	12/84		
Morocco	03/83	Zambia	01/82		
Nepal	08/83	Zimbabwe	06/82		
Niger	05/84				

solar conditions permit (based on the results of ongoing measurements) up to 4,000 m^2 of solar collectors could be installed at a cost of US$600,000 in various hotels within a year to save 4 GWh of gas oil/fuel oil-based power. The investors could save a maximum of SR 3 million (US$450,000) in gas oil and fuel oil costs each year. The RDU has recently finished developing a domestic design for solar collectors that is being evaluated for possible domestic production. Although the cost of this unit is claimed to be lower than that of imported units, the limited size of the local market and the high costs of establishing adequate production, maintenance and repair facilities may not justify its local production. A decision on local production should, therefore, be carefully evaluated.

Photovoltaics

4.17 Radio communication systems and several low voltage appliances such as refrigerators and fluorescent lamps that use photovoltaic power could be used on the outer islands and scattered settlements which have good solar insolation patterns. The French are now considering setting up a photovoltaic demonstration unit on Coetivy. The cost of a PV unit was US$9,000-11,000 per peak kW in 1982; and assuming fuel-oil transport costs for power generation on the outer islands to be SR 0.40/liter (US$10/bbl) in 1982 prices, fuel costs for fuel oil based power generation would be at least SR 0.7/kWh. However, the Government of Seychelles and IDC should work out the logistics of transporting fuel oil to the outer islands to decide on the cost-effectiveness of PV and other alternative energy systems. This planning should cover the cost of procuring extra barges or tankers for inter-island fuel oil transport and set-up costs of storage facilities and generators. This may make PV systems cost effective on some of the outer islands.

Wind

4.18 The limited wind data available suggest that modest wind regimes exist on Seychelles with average annual speeds of 4-4.5 m/sec. The Island Development Company (IDC) has expressed some interest in developing the wind potential. In the Mission's view, a few applications such as using wind for water pumping may be feasible on outer islands.

4.19 The British Government is financing a project to assess the wind energy potential on the outer islands by mapping their wind regimes. The British Government also is conducting a pilot project to integrate a wind turbine generator into the power system of one of the outer islands. Wind speed recording equipment procured from France will be installed on Denis Island to measure wind speeds for one year. The Mission supports this program.

Ocean

4.20 Ocean Thermal Energy Conversion (OTEC) No action is planned for an OTEC system for main island of Mahe, except for oceanographic data collection which will be done free of charge by Office pour le Recherche

Scientifique et Technique d'Outre Mer (ORSTOM) from France. As Mahe is located in the middle of a continental shelf, sites suitable for OTEC are not found closer than 60 km from the shore, where the ocean depth drops from 10-15 m to 1200-1500 m within 3-5 km., and where the ocean temperature drops from 25-30°C on the surface to 4°C at the bottom. In the Mission's view, the Government should not take any further action until the technical and economic viability of OTEC technology has been proven internationally. However, integration of energy production and mariculture activities may be relevant for outer islands because the OTEC sites are within 1 km of the outer islands.

Wave/Tidal

4.21 A preliminary assessment of possible wave energy resources on Mahe and Praslin was made by Crown Agents (UK) in 1982, but no estimate of generation capacity could be made because wave measurement equipment was not installed. The Mission agrees with the Government's view that wave power and tidal power do not present much potential because wave heights are small, the mean tidal range being only 0.9 m.

Mini-Hydro

4.22 A prefeasibility study by Tata Consulting Engineers (India) in August, 1982, identified eight sites with a combined potential of some 2 MW -- enough to meet about ten percent of Mahe's power needs. The Mission believes these resource figures are exaggerated; a more realistic assessment would probably show that mini-hydropower could meet about five percent of Mahe's power demand. The site at Grand Anse appears to be the most promising. Conditions for mini-hydro development at several of the other proposed sites are not good, as catchment areas are small. The Tata study showed power generation costs to be more than SR 1.20/kWh (US 183 mills/kWh) at all sites; however, the Mission believes this cost could be lower if resource figures were estimated realistically because civil engineering costs (accounting for 65% of set-up costs) would fall considerably. GOS has requested the Norwegian Government to do a detailed feasibility study and to provide monitoring equipment (including civil works) for the sites identified in the Tata report. So far no response has been received. The Mission recommends that an economic analysis and evaluation of the potential of a site be done before developing that site.

Activated Charcoal

4.23 The Center for Industrial Development (Belgium) and Carbon International (West Germany) funded an activated charcoal prefeasibility study, the first phase of which was completed in August 1982 at a cost of SR 165,000. The study suggested that the following could be economically feasible: (i) manufacturing high quality activated carbon from coconut shell for export; (ii) production of charcoal from sawmill and forestry residues for domestic consumption and power generation; and (iii) production of pyrolisis oil as a by-product of processes (i) and (ii) for use as liquid fuel. The second phase, expected to cost SR 400,000, will test

12' x 7' capacity, package-type chill room. An induction motor or grid power would run the compressor when wind speeds fall below 5 m/sec. The system is intended for test and demonstration and future expansion will depend on its economic/technical viability.

Ocean Thermal Energy Conversion (OTEC)

4.23 The Government has received proposals from at least two foreign groups on exploiting the thermal gradients off the country's coastline through OTEC plants. However, the mission views OTEC as a technology that is at least a decade away in terms of practical application in a developing country. Because of its limited resources, the extent of Government participation in this high technology research work should be limited to providing access to a suitable offshore site and similar in-kind assistance.

Institutional Issues

4.24 The mission sees a need to train one person from CPU's Energy Unit on new and renewable energy. This could be done through participation in short-term courses offered by a number of institutions abroad. A certain degree of expertise in this area is required to enable the Unit to judge the suitability of renewable energy projects being proposed in increasing numbers to the country, to actively participate with consultants in projects directly under CPU's supervision, and to effectively monitor those activities being conducted by other agencies.

4.25 The mission does not view the proposed Renewable Energy Demonstration Station (REDS) as a priority undertaking by the GOSL. Although the objective of creating a central facility for R&D in renewables has merits, the pressing need is to quickly and effectively implement priority activities that have already been identified, such as the establishment of fuelwood plantations. The important R&D areas cited as primary concerns with respect to the proposed station can be addressed within the relevant ministries if the concerned units or divisions are sufficiently strengthened. This approach would obviate the need to make substantial investments in new infrastructure or create another large organization whose long-term functions and means of support are not satisfactorily defined. As envisioned, the REDS will be supported by local and external funds in its first four years of operation and then become self-supporting through consulting contracts from the fifth year onwards. This appears unrealistic. The Government should review the basis of this expectation in particular and the rationale for creating REDS in general before making any investment commitments.

help define the sales contract requirements between Commodities Board and TEPB in the event of excess power availability on a regular basis (Annex 6).

Wave Energy

3.28 GOT has expressed interest in the concept of utilizing wave energy for power generation. A joint Norwegian/CCOP-SOPAC team visited Tonga in November 1984 and identified several sites on Tongatapu's coastline for wave power generation. Such power is only available when there are waves and hence there remains a need for backup facilities and/or energy storage. Ongoing research investigations indicate installation/construction costs for a 500 kW prototype station of about US¢6-7 per kWh under Norwegian wave and working conditions. However, these costs are country-specific and will vary with each individual country and its infrastructure. Furthermore, a testing period in Norway is required (2-3 years) before more stations are built. In the meantime GOT intends to implement a programme of visual wave-monitoring.

The Role of Solar Energy

3.29 Tonga is located in a region with abundant sunshine. Although the existing solar insolation data base is not extensive, records indicate an average daily radiation of 15-20 MJ/m^2 on an annual basis. From an energy viewpoint, the most immediately promising form of solar energy applications appears to be solar water heaters to substitute for electric and diesel-fired water heating systems in view of increasing electricity production costs and reductions in the capital costs of solar water heaters. 44/ There is potential to save ADO and conserve electricity consumption by retrofitting existing hot water systems with solar, especially in the case of institutions such as the Dateline Hotel, Liahona High School and Vaiola Hospital (which together account for about 13% of electricity consumption on Tongatapu). Preliminary analysis by the mission indicated that the Dateline Hotel could be retrofitted with a solar water heating system that could be designed, manufactured and installed at an estimated capital cost of about US$10,000 45/ and provide an estimated annual ADO savings of 8,000 litres. Since current heating requirements amount to about US$6,000 p.a. the payback period in simple terms would be less than two years.

44/ There is a private enterprise for assembling and installing solar water heaters in private residences. The mission was informed that 40 solar water heaters had been sold so far.

45/ Based on information from Suva manufacturer.

FIJI

powered by solar PV systems; 1/ and power kits of about 13 marine navigational lights have been replaced by solar PV units. 2/

2.42 Wind Energy: The Department of Telecommunications uses some wind-electric charger at several of its rural radiotelephone stations (IBRD Map 16936), and is currently testing a large unit at the Dongowale microwave transmitter on Viti Levu. These tests are based on a hybrid system of: (i) a 2 kW Dunlite windcharger (100 watts continous power); (ii) a multipanel PV system; and (iii) a standby diesel generator. The mission recommends that special attention be given to monitoring maintenance requirements and costs of the windcharger. Other activities include specially designed windsails for boats.

2.43 Wave and Ocean Energy Potential: The MRD has made several preliminary investigations: 3/ wave power investigations of eight locations on Viti Levu in 1979 and 1980 involving Crown Agents (UK) and the USP, and investigations for land-based Ocean Thermal Energy Conversion (OTEC) applications at Somosomo Bay, Natadola Bay and Naidiri Bay on Viti Levu. The prospects for economic use of these options are small. In the mission's view, GOF should discontinue its direct budgetary support for wave and OTEC energy investigations except in the context of a globally or regionally sponsored project.

E. Special Programs

2.44 Energy Conservation: The National Energy Conservation Program encompasses the following objectives:

(i) Building up an accurate data base on energy use by sector and fuel type, through energy end use surveys.

(ii) Identifying industries or buildings with conservation potential.

(iii) Conducting energy audits in selected buildings and institutions and calculating economics of conservation measures.

1/ The Department of Telecommunications routinely uses solar PV systems for stations requiring less than 20 amp-hours of current daily. A standard unit comprising a 1.2 amp (12 VDC) PV panel and a deep cycle battery (105 amp-hour storage capacity) is used.

2/ The Marine Division uses a standarized system comprising 3 PV panels (each 1.3 amps output), and one rechargeable battery (300-425 amp hour storage capacity), which provides 12 days back up and a pay back of 4 years.

3/ See 'Brief notes on Potential for Wave Engine (Passive) and OTEC in Fiji', Mineral Resources Department. No. MP 24/6, by J. Lum, January 1983, and several reports by K. Holmes, also of Mineral Resources Department.

drying requirement for commercial lumber will be difficult to achieve in a solar kiln. The mission recommends that SRC focus only on crop drying. It is also recommended that the SRC staff actively monitor ongoing solar pilot and/or demonstration projects.

Ocean Thermal Energy Conversion

4.28 Ocean Thermal Energy Conversion (OTEC) technology has not been tested on a scale of operation that allows an estimate of the costs associated with operating a commercial plant. The mission recommends that the GOJ only monitor the ongoing R&D and testing efforts in the U.S. and other countries and not waste time and resources on testing this technology.

Wind Energy Systems

4.29 The wind mapping efforts are currently underway. Preliminary indications are that the low wind speeds will make the application of a wind power generation system uneconomical.

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<TITLE(MONO)> Measurements of gas absorption from seawater and the influence of
  gas release on open-cycle ocean thermal energy conversion (OC-OTEC) system
  performance
<EDITOR OR COMP> Penney, T.R.; Althof, J.A.
<CORPORATE AUTH> Solar Energy Research Inst., Golden, CO (USA)
<SEC REPT NO> CONF-850604--12
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<TITLE(MONO)> Review of environmental, barge, and pipe time history records
  from the OTEC CWP at-sea test, April-May 1983.  Volume 2. Tabulation of
  statistical parameters for seven discs; tabular and graphical display of
  selected parameters
<EDITOR OR COMP> Vega, L.; Nihous, G.; Hoech, J.
<CORPORATE AUTH> EG and G/Washington Analytical Services Center, Inc.,
  Berkeley, CA (USA)
<AVAILABILITY> NTIS, PC A16/MF A01.
<DATE> Aug 1984
<DROP NOTE> See also PB85-120509. Sponsored in part by National Oceanic and
  Atmospheric Administration, Rockville, MD
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<ACCESSION NO.> 84J0164975 ********3
<TITLE> An experimental investigation of OCOTEC direct-contact condensation and evaporation processes
<AUTHORS> Sam, R.G.; Patel, B.R.
<AUTHOR AFF> Creare R and D, Inc., Hanover, NH
<PUB DESC> Journal of Solar Energy Engineering (U.S.) Assumes volume numbering of the Trans. ASMEof Civil E--, v. 106, no. 1, pp. 120-127
<DATE> Feb 1984
<ISSN/ISBN CODE> 0199-6231

<ACCESSION NO.> 84R0081439 ********4
<REPORT NO,PAGE> PB--83-221143 P. 77;TI84002492
<TITLE(MONO)> Environmental design criteria for the 1/3 scale OTEC (Ocean Thermal Energy Conversion) cold water pipe At-Sea Test Site off Honolulu, Hawaii
<CORPORATE AUTH> Noda (E.K.) and Associates, Honolulu, HI (USA)
<SEC REPT NO> DOE/NOAA/OTEC--66
<AVAILABILITY> NTIS, PC A05/MF A01.
<ORDER NUMBER> TI84002492
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<DATE> Jan 1982

<ACCESSION NO.> 84R0081438 ********5
<REPORT NO,PAGE> PB--83-221093 P. 158;TI84002477
<TITLE(MONO)> Methods for and examples of dynamic load and stress analysis of OTEC (Ocean Thermal Energy Conversion) cold water pipe designs. Volume 1
<EDITOR OR COMP> Barr, R.A.; Chang, P.Y.; Thasanatorn, C.
<CORPORATE AUTH> Hydronautics, Inc., Laurel, MD (USA)
<SEC REPT NO> DOE/NOAA/OTEC--49
<AVAILABILITY> NTIS, PC A08/MF A01.
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<DATE> Nov 1978

<ACCESSION NO.> 84R0081434 ********6
<REPORT NO,PAGE> DOE/ET/20342--T8 P. 20;DE84009393
<TITLE(MONO)> At-sea test of a large diameter steel, cold water pipe
<EDITOR OR COMP> Blevins, R.W.; Donnelly, H.L.; Stadter, J.T.; Weiss, R.O.; Perez y Perez, L.
<CORPORATE AUTH> Johns Hopkins Univ., Laurel, MD (USA). Applied Physics Lab.
<AVAILABILITY> NTIS, PC A02/MF A01; 1.
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<DATE> 1979
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<TITLE(MONO)> Study of the macrozooplankton within the samples taken at the Mobile site from November 1977 through November 1978. A data report of the Lawrence Berkeley Laboratory
<EDITOR OR COMP> Steen, J.; Gunter, G.
<CORPORATE AUTH> Gulf Coast Research Lab., Ocean Springs, MS (USA)
<AVAILABILITY> NTIS, PC A02/MF A01.

<ORDER NUMBER> DE83015714
<CONTRACT NO> Contract W-7405-ENG-48
<DATE> Nov 1981

<ACCESSION NO.> 84R0062890 ********8
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<TITLE(MONO)> Oceanographic data off southern Hawaiian Islands
<EDITOR OR COMP> Wilde, P.; Chase, T.E.; Normark, W.R.; Thomas, J.A.; Young, J.D.
<CORPORATE AUTH> Lawrence Berkeley Lab., CA (USA)
<AVAILABILITY> NTIS, PC A03/MF A01.
<ORDER NUMBER> DE84004404
<CONTRACT NO> Contract W-7405-ENG-48
<DATE> Jul 1980

<ACCESSION NO.> 84R0062889 ********9
<REPORT NO,PAGE> DOE/ET/21055--T4 P. 283;DE83015171
<TITLE(MONO)> Development, design, fabrication and testing of Ocean Thermal Energy Conversion (OTEC), Power System Development (PSD) II. Volume III. Heat transfer test report. Preliminary design report
<CORPORATE AUTH> General Electric Co., Schenectady, NY (USA); Sea Solar Power, Inc., York, PA (USA)
<AVAILABILITY> NTIS, PC A13/MF A01; 1.
<ORDER NUMBER> DE83015171
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<ACCESSION NO.> 84R0042548 *******10
<REPORT NO,PAGE> LBL--9439 P. 137;DE84005036
<TITLE(MONO)> Preliminary data reports for the GOTEC 04, 05, 06 and 07 cruises to the Gulf of Mexico, Mobile and Tampa sites, June 1978-December 1978
<CORPORATE AUTH> Lawrence Berkeley Lab., CA (USA)
<AVAILABILITY> NTIS, PC A07/MF A01.
<ORDER NUMBER> DE84005036
<CONTRACT NO> Contract W-7405-ENG-48
<DATE> 1980

<ACCESSION NO.> 84R0042547 *******11
<REPORT NO,PAGE> LBL--9437 P. 27;DE84005037
<TITLE(MONO)> Ocean thermal energy conversion preliminary data report for the November 1977 GOTEC-02 cruise to the Gulf of Mexico Mobile Site
<CORPORATE AUTH> Lawrence Berkeley Lab., CA (USA)
<AVAILABILITY> NTIS, PC A03/MF A01.
<ORDER NUMBER> DE84005037
<CONTRACT NO> Contract W-7405-ENG-48
<DATE> Mar 1980

<ACCESSION NO.> 84J0004668 *******12
<TITLE> Biofouling monitors for noncylindrical OTEC heat exchanger tubes
<AUTHORS> Kuzay, T.M.; Gavin, A.P.; Panchal, C.B.
<AUTHOR AFF> Argonne National Laboratory, Argonne, IL 60439
<PUB DESC> Journal of Solar Energy Engineering (U.S.) Assumes volume numbering of the Trans. ASMEof Civil E--, v. 104, no. 3, pp. 257-261

<DATE> Aug 1982
<ISSN/ISBN CODE> 0199-6231

<ACCESSION NO.> 81R0072999 *******13
<REPORT NO,PAGE> JHU/APL-SR--81-1B;DE81024157
<TITLE(MONO)> Model tests of a baseline 40 MW OTEC pilot plant. Volume B: test data
<EDITOR OR COMP> George, J.F.; Stadter, J.T.; Donnelly, H.L.; Richards, D.; Biewer, F.N.; Hutchison, B.L.
<CORPORATE AUTH> Johns Hopkins Univ., Laurel, MD (USA). Applied Physics Lab.
<AVAILABILITY> NTIS, PC A23/MF A01. ORDER NUMBER DE81024157.
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<TITLE(MONO)> Model tests of a baseline 40 MW OTEC pilot plant. Volume A: narrative report
<EDITOR OR COMP> George, J.F.; Stadter, J.T.; Donnelly, H.L.; Richards, D.; Biewer, F.N.; Hutchison, B.L.
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<EDITOR OR COMP> O'Connor, J.S. (ed.)
<CORPORATE AUTH> Johns Hopkins Univ., Laurel, MD (USA). Applied Physics Lab.
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<PRINCIPAL INV.> Thomas, A.
<PI PHONE> F972-8071
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<DIVISION> Energy and Environmental Systems Division
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<PRINCIPAL INV.> Clark, Y.Y.
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<PRINCIPAL INV.> Wilde, P.
<PI PHONE> C415-642-6535
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<DIVISION> Department of Paleontology, Marine Sciences Group
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<PRINCIPAL INV.> Holmes, D.L.
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<PI PHONE> F972-8071;F972-8070
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<PRINCIPAL INV.> Lavi, A.
<PI PHONE> C412-621-5345
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<DIVISION> Energy Systems Department
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<ORGANIZATION> Lawrence Berkeley Laboratory
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<DIVISION> Center for Energy and Environmental Research
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<PRINCIPAL INV.> Schultz, J.A.
<PI PHONE> C603-436-6100
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<PI PHONE> C617-253-6595
<ORGANIZATION> Massachusetts Institute of Technology
<DIVISION> Energy Lab.
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THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT/83/005

DATE: April 21, 1986

TO: Mr. Anthony Cole, Chief, AEASE

FROM: Masood Ahmed, Deputy Division Chief, EGYS1

EXTENSION: 73996

SUBJECT: THAILAND: ESMAP Biomass Energy Preinvestment Studies
Activity Initiation Briefs

1. Attached please find for your review and comments two draft Activity Initiation Briefs (AIB) for ESMAP preinvestment studies that are proposed in the area of biomass energy production and use. Although these two activities are designed to be implemented separately, their background and objectives are closely linked. The first covers the preparation of a demonstration fuelwood project for the Northeast Region which could help to lay the basis for an expanded program of social forestry in the country. And the second activity addresses the issues of woodfuel conversion and utilization efficiency by preparing a program to accelerate the dissemination of improved cooking stoves and charcoal kilns.

2. Both activities were identified as a high priority for followup in the 1985 ESMAP report "Thailand: Rural Energy Issues and Options," which concluded that despite widespread switching to modern fuels, the supply/demand imbalance for woodfuels would worsen over the next twenty years unless urgent action was taken to increase wood supply and to manage demand through more efficient conversion and utilization of wood and charcoal. Following these recommendations, the Government of Thailand through the National Energy Administration (NEA) and the Royal Forestry Department (RFD), requested ESMAP assistance in preparing specific action programs to address these issues. In response to this request, an ESMAP reconaissance mission visited Thailand in March, 1986, to discuss the precise objectives, scope and modus operandi for the proposed ESMAP activities. As indicated in the mission's Back to Office Report of March 31,1986, subject to Bank management approval, agreement has been reached on these issues with the concerned government agencies. The attached AIB's reflect these discussions and incorporate informal comments received from concerned staff in the Bank.

3. The next step after the internal review of the attached drafts has been completed, is to forward them to the Thai Government agencies involved for their review and to enable them to begin the preparatory work. Thereafter, missions are planned for both activities in June, 1986, to take advantage of field conditions before the heavy rainy months. The fuelwood project preparation study will also require a second mission in November to complete the data gathering and field analysis.

4. As regards cost, the fuelwood project preparation study is expected to require a total of $225,000 while the improved charcoal stove and kiln preparation study will cost about $150,000. Partial funding for these activities may be provided through ESMAP by the EEC and the Belgian Government.

5. Please send any comments or queries on the attached material to Mikael Grut (X 75508), who will be responsible for the fuelwood project preparation study; Ernie Terrado (X 73435), who will be responsible for the charcoal stoves and kilns study; or to myself (X 73996). Please also let me know if you would like a meeting to review these drafts in which case we would be happy to arrange one.

Attachment

cc: Messrs. Blaxall, Navyar, Ahmed (AEP); Kikuchi, Lav (AEA); Gamba (IND); Bourcier, Hume, Saunders, Sadove, Kalim, McCarthy, Dosik, Fish, Heron, de Capitani (EGY); Harland, Rothermal/Cox (UNDP); Hermans (resident representative).

EGYS1/EGYS2 Professional Staff

MAhmed:dap

INT 83/005

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

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April 17, 1986

Mr. Pierre Lequeux
Administrateur Principal
Commission des Communautes Europeennes
Direction Generale du Developpement
200, Rue de la Loi
1049 Brussels
Belgium

Re: Proposed ESMAP Activities in Thailand

Dear Mr. Lequeux:

Please refer to Mr. Hume's letter of April 9, 1986 regarding proposed ESMAP activities in Thailand. Attached are copies of the two activity initiation briefs referred to in the letter but which were inadvertently not endorsed therewith.

We regret any delay or inconvenience.

Yours sincerely,

Bernard Montfort
Division Chief
Energy Strategy & Preinvestment
Division I
Energy Department

Attachments

F 338
INT/83/005

Letter No. DO15/POW/IV/86 April 17, 1986

His Excellency
Professor Dr. Subroto
Minister of Mining and Energy
Department of Mining & Energy
Jl. Merdeka Selatan 18
Jakarta

Dear Mr. Minister:

Re: Power Generation Efficiency Study No. 050/86

Enclosed please find the final version of the above report which was prepared under the joint UNDP/World Bank Energy Sector Management Assistance Program.

The report is based on the findings of a World Bank mission, headed by Mr. A. Gulstone, which visited Indonesia during November of last year. It identifies potential efficiency improvement and cost-saving projects in the Java power system, together with improvements in the maintenance of Indonesia's diesel plants. The following action plans with excellent returns on investment are suggested:

(a) system operation improvemtent;

(b) upgrading steam plant maintenance;

(c) steam plant efficiency management;

(d) steam plant upgrading; and

(e) hydro plant rehabilitation.

The report indicates furthermore, that to recover derated capacity, improvement in the diesel plant will mainly be in terms of maintenance and rehabilitation.

The Dutch Government has expressed strong interest in financing some of the follow-through work identified for the diesel plants. The Nordic Investment Bank has also expressed interest in financing some of the follow-through work on the Java system.

We hope that this study will be useful to the Government in carrying these projects through completion.

In view of their involvement in this matter, we have copied this letter to the persons listed below.

With kind regards,

Yours sincerely,

D.C. Rao
Director
Resident Staff in Indonesia

Enclosures

cc: Drs. Muchtarudin Siregar, BAPPENAS
Drs. Mursjid, BAPPENAS
Dr. Bambang Purnomo, BAPPENAS
Drs. R. Almatsier, BAPPENAS
Drs. Soegito Sastromidjojo, MinFin
Ir. Sardjono, PLN
Prof. Dr. A. Arismunandar, Dept. of Mining & Energy
Dr. A.J. Surjadi, Dept. of Mining & Energy

cc:GKaji, Masood Ahmed, AGulstone
DWilliams, FFord, JKhalilzadeh-Shirazi

GKaji:CB:DWilliams:DCRao:cb

File: ESMAP

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT/83/005

DATE: April 17, 1986

TO: Ms. Jacqueline Shanberge, EGYS1

FROM: Bernard Montfort, Division Chief, EGYS1

SUBJECT: ESMAP: SENEGAL - Industrial Energy Conservation Project
NIGER - UNSO Energy Conservation and Substitution Study
NEW YORK - Meeting with UNSO re Niger Projects
Terms of Reference

Senegal

1. You should arrive in Dakar on April 18, 1986 to meet with Mr. Verlet, NOEC Advisor for the SENEGAL: Industrial Energy Conservation Project. The purpose of your meeting will be two-fold: to discuss the Bank's comments sent April 11, 1986 on the Inception Report for the Institution Environment Study; and to pick up Mr. Verlet's report on the first three months and discuss the consultanting team's recommendations and work plan for the upcoming period which will end with final recommendations for setting up the New Office of Energy Conservation.

2. Also while in Senegal, either during this leg of your trip or on your return on April 30, 1986, meet with Mr. Cisse, Energy Director, MDIA to get his feedback on the progress of the Energy Conservation project. Also discuss the proposal made by the Canadians for an audit program and how this will be carried out. In addition, find out from Mr. Cisse the progress being made on the UNDP Peat Project and any planning that has begun for the ESMAP proposed Household Energy Strategy Project, tentatively scheduled to begin in September, 1986.

3. Regarding the SENEGAL: Industrial Energy Conservation Project, meet with Mr. Salif N'Diaye, UNDP Resident Representative to discuss progress on the project and to confirm the Bank's and UNDP's agreement on the project's revised budget.

4. Regarding arrangements being made to send Sengalese kerosene stoves to Niger for the UNSO project you should meet with Mr. Armer, assistant to World Bank Resident Representative. He will assist you in purchasing and making arrangements to transport ten stoves with you to Niamey.

Niger

5. On April 19, 1986 you should proceed to Niamey for meetings with the Government of Niger to start up the NIGER: UNSO Energy Conservation and Substitution Study. The objectives of your mission are to: have the correct Project Document signed, commence the project, introduce two of the seven consultants (Messrs. Bussman, Stove Technologist and Matly, Marketing Specialist and one of two consultants responsible for coordinating field work in Niger), discuss in detail the

arrangements and schedule for project execution and secure the physical arrangements for the consultants while they are in Niamey (i.e. office space, secretary, space for the computer, and transportation). In addition, you should be available to discuss any questions that the Government may have.

6. Also while in Niamey, regarding the NIGER: Improved Stove Project, you should discuss with the Government the Mid-Term Report for this project as it has been completed based on the information supplied through December, and notify headquarters when it has been cleared. In addition, discuss and update the Report with Messrs. Michael Gajo, Project Director and Paul Bussman, Stove Technologist and Ms. Marion Fischer, Promotion Expert, to include the most recent developments of the project (from January through April, 1986). In updating the report, try and address the following questions: How many people have begun using the improved stoves and what percent are they of total population and of urban population? What has been the affect on woodfuel consumption? What is the attitude of housewives concerning the improved stoves?

7. In regard to the Improved Stove Project, you should meet with Messrs. Teissonnier and Simeon, Resident EEC delegation, to discuss EEC's work in Niger with improved stoves.

New York

8. You should proceed to New York on May 1, 1986 for a meeting with Mr. Astolfi (responsible for projects in Niger) and Ms. Chahkar of UNSO to brief them on the start-up mission for the NIGER: UNSO Energy Conservation and Substitution Project.

Washington, D.C.

8. Upon your return to headquarters, you should prepare a Back-to-Office Report outlining the discussions carried out in New York, Senegal and Niger and finalize and publish the Mid-Term Report for the Niger Improved Stoves Project.

cc and cl/with: Mr. Fares (WA2)
Ms. Martinez (WA1)

cc: Messrs. Bauer/Menezes (WAPEG), Mulckhuyse (INDRE); Floor (EGY)

JShamberge:lt

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

Nangbeto Wood Recovery
Cr. 1508-TO
Dev. Files

INT|83|005

DATE: April 16, 1986

TO: Distribution

FROM: Bernard Montfort, Chief, EGYS1

SUBJECT: ESMAP: Togo - Wood Recovery on the Nangbeto Lake

-to Docs

1. Attached is a copy of the final version of the above report which has been prepared under the Joint UNDP/World Bank Energy Sector Management Assistance Program. The report provides a brief account of the assistance provided to the Government of Togo in relation to the recovery of biomass resources from the Nangbeto Lake. A detailed report prepared by the consultants recruited for this activity has been reviewed within the Bank and the recommendations made have largely been acted upon by the relevant authorities in Togo. Consequently, the purpose of finalizing the attached report is essentially to inform the donor community of the work done and the contribution of ESMAP.

2. Please send any comments you have on this report to Mr. Willem Floor (ext. 75425).

Attachment

Distribution

Messrs. Thalwitz, O'Brien (WANVP);
Fuchs, Husain, Al-Khafaji, Bauer, Davis, Menezes (WAP);
Serageldin, Skillings, Turner, Thiam, Mpoy-Kamulayi, Singh (WA2);
Rajagopalan, Raphaeli (PPD); Dubey (CPD); Richardson (IFC);
Riley (IRD); Dherse, Weissman, Ludvik (EISVP);
Golan, Kohli, Gamba (IND); Bourcier, Hume, Sadove, Saunders,
Iskander, de Capitani, Dosik, Fish, Heron, Ferroukhi;
Kalim (EGY)

Ms. Haug (IND)

cc: EGYS1 Higher Level/Researcher Staff (w/o attachment)

/aaf

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

INT/83/005

DATE: April 11, 1986

TO: Mr. Devbrat Dutt, Division Chief, AEASP

FROM: Masood Ahmed, Deputy Division Chief, EGYS1

EXT: 73996

SUBJECT: ESMAP: SOUTH PACIFIC - Briefing Note on ESMAP Activities for Mr. Karaosmanoglu

A brief note on ESMAP activities in the South Pacific is enclosed for Mr. Karoasmanoglu's reference for his trip to the region between May 5 and 15. We feel that no issues need be raised by him in his discussions. However, because issues relating to the ESMAP petroleum supply management study may be raised by counterparts, the attached is provided for information. As you may recall, discussions on the green cover draft of that report are scheduled to be held in Fiji in mid-May (although confirmation has not been received).

Enclosure

cc: Messrs. Hume, Montfort, McCarthy, Mian (EGY); Nayyar (AEP).

RTaylor:hm

Briefing Note on ESMAP Activities in the South Pacific

No issues need to be raised by Mr. Karaosmanoglu in regard to the UNDP/World Bank energy sector programs during his May 1986 discussions in Fiji, Western Samoa, and Australia. Issues may however be raised by counterparts pertaining to the ESMAP study, South Pacific: Petroleum Supply Management Assistance. The green cover draft has just been sent to the concerned governments and regional agencies (SPEC, UNPEDP, UNDP). The draft is scheduled to be discussed at an inter-governmental meeting organized by SPEC in Suva in mid-May, at which EGY staff will be present.

Background. The petroleum supply management study covers PNG, Fiji, Western Samoa, Solomon Islands, Vanuatu, Tonga, Cook Islands, Kiribati, Tuvalu, Tokelau, and Niue. The study outlines and evaluates alternative supply arrangements to minimize foreign exchange expenditures for importing petroleum products. The potential for reducing import costs had been raised as an issue in previous studies conducted by regional organizations. Following the conclusion of the energy assessment reports that import costs could be reduced without compromising security or disrupting supplies, the South Pacific governments requested assistance from ESMAP to more fully examine the issue.

Currently, petroleum products are supplied by the marketing affiliates of several major oil companies in each country (with the exception of Western Samoa, where only one supplier operates), who obtain products from their affiliate refineries at posted prices. The alternative supply arrangements reviewed in the ESMAP study included: (a) constructing a regional refinery; (b) procuring crude oil directly for toll processing to meet the region's requirements, (c) adopting an inter-government product supply arrangement; (d) combining regional imports under a regional tender through international competitive bidding; and (e) adopting national tender procurement systems on a country-by-country basis. The study concluded that the greatest savings (conservatively estimated at US$6.2-9.4 million p.a.) could be achieved by adopting the regional tender approach. Under this arrangement, the current marketers would retain responsibility for onshore marketing, transshipment within the region, and maintenance of storage facilities, but would sign a supply contract with the winning bidder to service their respective market shares. The potential savings could be achieved without compromising the security of supplies, directly involving the governments in the day-to-day operations of the oil companies, new major investment, or governments holding title to petroleum products. This arrangement would however require agreement among the countries concerned and the cooperation of the oil marketers.

Additional savings also were identified through rationalization of transshipment to the smaller countries, revision in current arrangements for procuring LPG, and revision in minimum specifications in certain products to better match market demand. Evaluation of issues

relating to onshore costs, such as storage, haulage, and marketers' margins, was not within the scope of the study.

Several issues which may be raised. Western Samoa adopted a national tender procurement system based on a single supplier in April 1984, and other countries in the region, including Fiji, are considering adoption of this approach, partly as a result of previous studies conducted by regional organizations. The ESMAP study concluded that higher savings could be achieved through the regional tender approach, basically due to economies of scale. Purchases for Western Samoa are still in effect being made at posted prices. In the ESMAP mission's view, the primary objective for countries in the region must be to obtain price discounts off postings to bring contract prices down closer to spot market-related prices. In addition, although not explicitly discussed in the report, the mission was concerned about the way in which the national tender approach was implemented in Western Samoa: a confrontational approach was used, and the government required that the successful bidder be given access to the storage facilities of other competing companies, under threat of forced divestiture.

Representatives from SPEC and UNPEDP had participated in the ESMAP mission and were allowed to review and comment on an early draft in Washington, but with the explicit understanding and agreement that the contents of the report would be held strictly confidential. Nevertheless, it appears that details on the mission's findings have subsequently been released in the region prior to submission of the green cover draft to the concerned governments.

While strategy for follow-up to the ESMAP study by the governments and regional organizations will be discussed at the Suva intergovernmental meeting proposed for mid-May 1986, no further ESMAP involvement is foreseen at this time.

The oil industry has not yet reviewed the mission's report but it is the intention that the conclusions be discussed with them during the May mission. In the interim, their representatives may raise concerns about what the report's recommendations may imply for their existing business arrangements.

Other Assessment/ESMAP Studies Completed in the Region

Country	Report	Date
PNG	Energy Assessment	6/82
Fiji	Energy Assessment	6/83
Solomon Islands	Energy Assessment	5/83
PNG	ESMAP Energy Assessment Status Report	7/83
PNG	ESMAP Energy Sector Institutional Review	10/84
PNG	ESMAP Power Tariff Study	10/84
Vanuatu	Energy Assessment	6/85
Tonga	Energy Assessment	6/85
Western Samoa	Energy Assessment	6/85

RTaylor:hm 4/10/86