936-5711004201

PD-AA6-2106

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] A = ADD, C = CHANGE, D = DELETE — PP

2. DOCUMENT CODE: 3

3. COUNTRY ENTITY: Worldwide

4. DOCUMENT REVISION NUMBER: [ ]

5. PROJECT NUMBER (7 digits): [ ]

6. BUREAU/OFFICE: A. SYMBOL: DS/EY; B. CODE: [ ]

7. PROJECT TITLE (Maximum 40 characters): ~~Peace Corps~~ Survey Demonstration Renewable Energy Project

8. ESTIMATED FY OF PROJECT COMPLETION: FY 79

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 79; B. QUARTER 1 (Enter 1, 2, 3, or 4); C. FINAL FY 79

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL						
(GRANT)	(250.4)	( )	(250.4)	(250.4)	( )	(250.4)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY						
OTHER DONOR(S)						
TOTALS	250.4		250.4	250.4		250.4

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 79 F. GRANT	E. 1ST FY 79 G. LOAN	H. 2ND FY — I. GRANT	H. 2ND FY — J. LOAN	K. 3RD FY — L. GRANT	K. 3RD FY — M. LOAN
(1)				250.4					
(2)									
(3)									
(4)									
TOTALS				250.4					

A. APPROPRIATION	N. 4TH FY — O. GRANT	N. 4TH FY — P. LOAN	Q. 5TH FY 79 R. GRANT	Q. 5TH FY 79 S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1)					250.4	
(2)						
(3)						
(4)						
TOTALS					250.4	

12. IN-DEPTH EVALUATION SCHEDULED: MM YY = 10 79

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET. [ ] 1 = NO, 2 = YES

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Alan B. Jacobs

TITLE: Alan B. Jacobs
Director, DS/EY

DATE SIGNED: MM 09 DD 21 YY 78

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY

AID 1330-4 (3-76)

SUPPORT TO THE PEACE CORPS RENEWABLE ENERGY PROGRAM

Part I - Summary

A. Recommendation:

We recommend a PASA of $250,400 in FY 78 to ACTION/Peace Corps to organize, develop, conduct and evaluate a prototype energy survey and a training program in renewable energy technology.

B. Description of Project:

The project has two main purposes: to conduct an energy use survey in selected rural villages and to instruct a group of Peace Corps Volunteers (PCVs) in the principles and applications of appropriate renewable energy technologies. This is a one-year pilot project ending September 1979.

The project consists of three separate but related activities:

a) an initial period of 2 1/2 months during which specialists will visit the field to train PCVs in the conduct of a rural energy survey and to identify renewable energy/appropriate technology projects to be undertaken by PCVs in FY 79;

b) an energy audit survey in approximately 300 rural villages in 12 countries to gather data on domestic energy use, agricultural and commercial/small-scale industrial energy use. The survey conducted over a 14 month period, will also gather data on solar insolation, wind and water power and biomass availability. (The Peace Corps activity will begin but not be completed during this course of this project.); and

c) a 3 month training program during late FY 79 to instruct 20-30 PCVs in renewable energy technologies. These PCVs will be assigned to pilot renewable energy projects.

C. Summary Findings:

The Peace Corps (PC) already has direct field experience with renewable energy systems and several PCVs are experimenting with solar and other alternative energy technologies. (An AID-financed but Peace Corps-managed methane gas project in Nepal has attracted much interest from professionals in the renewable energy field.) The very nature of decentralized energy systems implies that large-scale programs will require large numbers of people to develop and manage individual projects. The Peace Corps can provide a source of trained personnel, located in rural areas and available to work in this relatively new field.

An organized PC renewable energy program likely will lead to greater effectiveness of individual PCV efforts. The project will increase awareness of renewable energy issues in host countries. Trained PCVs will be able to

help host countries develop renewable energy programs. Data collected in the energy survey will provide valuable information on non-commercial energy use in rural areas. This information will help fill an important gap and will be of use to many development organizations.

The project budget breaks down roughly into $107,400 for program development and survey activities and $143,000 for the training program. Project costs are understated for two reasons: the al Dir Iyyah Foundation[1] is providing funds for the design of the survey questionnaire; and living allowances and related expenses for the PCVs involved in the project will be provided by the Peace Corps and participating countries.

D. Issues:

Numerous groups and individuals are getting involved in renewable energy projects in developing countries. The potential for duplication exists. Will this project duplicate the efforts of others?

The success of new programs proposed by foreign development groups depends on their active involvement and support by host countries. Indeed, unless any host country is willing to adopt a project as its own, any success is short-lived. Has adequate preparation been done to encourage and support active host country participation in the project?

Part II - Project Background & Detailed Description

A. Background:

The central role of energy in the development process has long been demonstrated. Until the quadrupling of crude oil prices in 1973, it was assumed that developing countries would follow the developed world by depending on oil and gas to fuel their development in the last part of the 20th Century. It is now clear that non-oil producing LDCs will have to explore new sources of energy if they hope to mitigate the effects of high priced commercial energy sources. Obvious sources are the so-called non-commercial or renewable fuels (wood, straw, dung, biomass, etc.). Although interest in renewable sources is currently very strong, non-commercial fuels have always provided the bulk of the energy needs of rural populations in LDCs. As development projects increase the demand for energy, renewable energy sources are likely to have an increasing importance. Thus an accurate understanding of the nature and practicability of renewable energy sources is of paramount importance.

AID's long participation in energy projects has recently been complemented by increasing activity in the field of renewable energy programs and appropriate technology. The Office of Energy was established in March 1978 within the Development Support Bureau. The Development Coordination

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[1] A Saudi Arabian organization set up by the late King Feisal to sponsor research on development issues. The Foundation's participation is being coordinated by the Overseas Development Council.

Committee has agreed that AID should be the lead agency for bilateral energy programs with developing countries and that AID should organize a core energy staff to use outside resources and to relate energy programs to other aspects of development.

The Peace Corps has long been involved in a variety of renewable energy/appropriate technology projects. However, there has been no formal PC program to plan, implement and evaluate such projects. Basic data on rural energy use, so necessary to evaluate accurately such projects, have also been lacking. PC and AID have common interests in undertaking an organized renewable energy program. PCVs work in rural communities for two years, they speak the local language, understand cultural differences and share the day-to-day life of the people with whom they work. Suitably trained, PCVs are in an ideal position to collect data and demonstrate renewable energy projects. AID, which has a congressional mandate to assist LDCs with renewable energy programs (Section 119, 1977 Foreign Assistance Act) can provide technical expertise and financial assistance. The data collected will help AID in planning renewable energy projects.

Recognizing that AID and Peace Corps activities could be complementary, the Administrator of AID and the Director of Peace Corps formally agreed to plan and implement mutual programs (see letter dated April 3, 1978, Tab A). This collaboration is in line with the proposed new structure of foreign assistance programs which gives AID primary responsibility for coordinating foreign aid.

B. Detailed Description:

The project is composed of three inter-related activities.

a) During the planning phase (12 months), 6 specialists will visit 12 countries (a) to train PCVs to conduct the energy use survey (see 2 below) and (b) to identify potential renewable energy projects for the Peace Corps to begin in late FY 79. The training will ensure that all data collectors have a thorough understanding of the survey and surveying techniques. The projects to be identified will emphasize small-scale renewable energy technologies and resources, especially appropriate for use in rural villages, farms and households.

b) Energy Survey:

The energy survey is designed to collect data on energy use and to assess the potential utilization of renewable energy sources in approximately 300 villages in 12 countries. The survey will provide base-line data to assist host countries to develop energy programs and provide data to international development organizations on non-commercial fuel use. The survey will help the PC identify potential renewable energy projects and will alert all the interested parties - villagers, host country officials, PCVs - to the issues involved in renewable energy projects.

The survey is scheduled to start in early Fall 1978 and will be conducted over a one-year period by PCVs in their second year of service. The survey will attempt to determine the following factors:

Energy use: In assessing current energy uses, the focus will be on the amount of energy used by selected families for domestic cooking, heating, lighting and washing. Families with different consumption patterns (e.g. farmers, government officials, teachers) will be surveyed. Where possible, fuel consumed will be measured directly, otherwise measurement will be by indirect estimate (e.g. a bundle of wood of such a size weighs approximately so much.)

Energy Needs: The survey will also measure the energy needs for agriculture-related activities (land preparation, irrigation, harvesting, threshing, crop drying) and for non-agriculture related (metal working, tailoring, tea shops.)

Energy Potential: The final aspect of the survey will estimate wind and solar power in the area and the amount of biomass available for gasification. Solar insolation will be calculated from survey data and will be checked against existing meterological data to determine the latter's accuracy. The data collected in this part of the survey will help identify potential renewable energy sources and indicate what additional studies might be necessary.

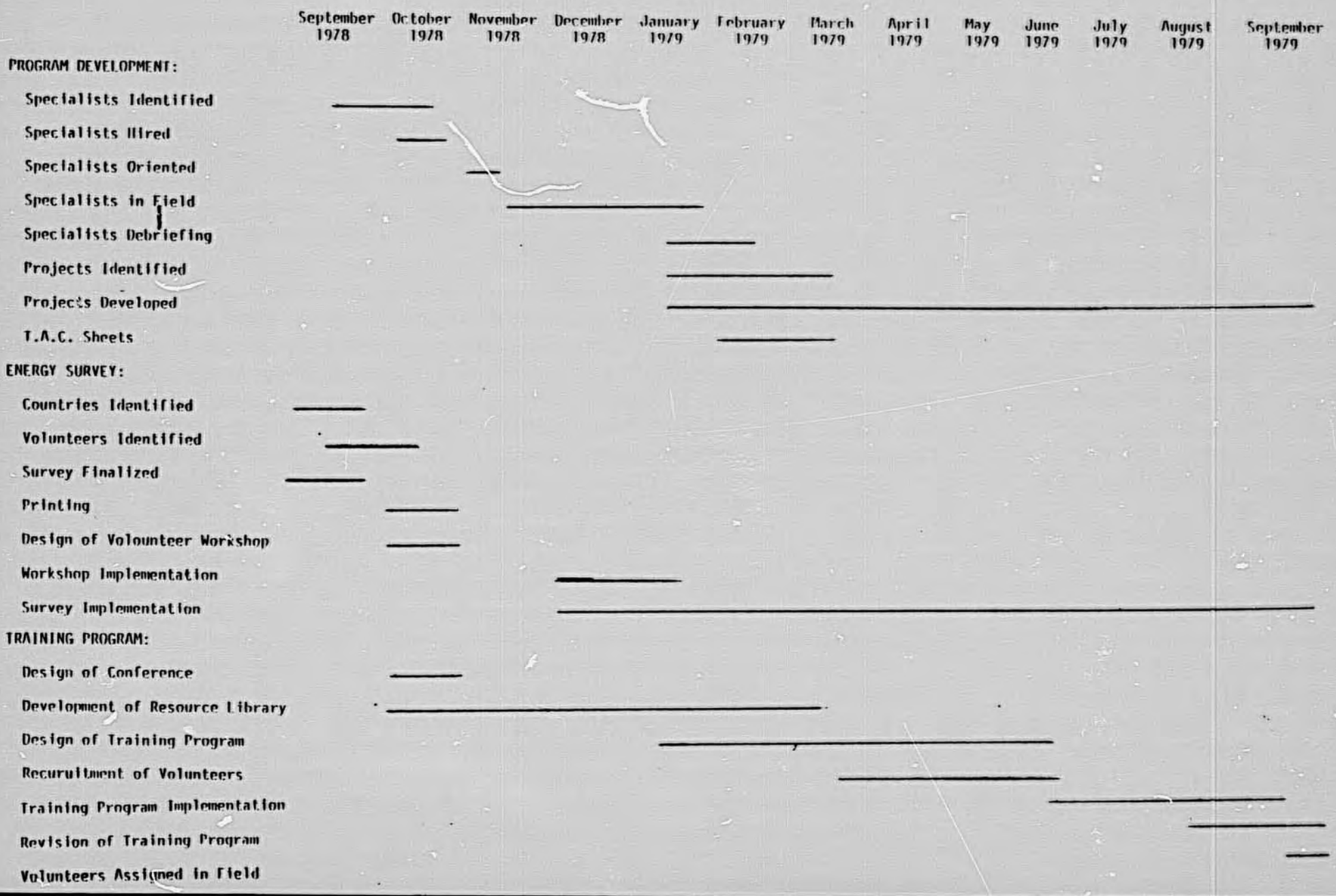
c) Training:

The renewable energy training program will instruct PVCs on the principles of appropriate renewable energy technologies, demonstrate the uses and limitations of various renewal energy systems and give PCVs actual experience in constructing and maintaining such systems. The various systems which will be studied include: windmills, biogas and solar radiation and distillation.

A pilot training program for 20-30 volunteers will be held in Summer 1979. After evaluation, the revised training manual will be used for future PC and host country use in designing and implementing renewable energy projects.

The schedule for these three activities is graphically displayed in the following chart:

SCHEDULE FOR DEVELOPMENT OF PEACE CORPS RENEWABLE ENERGY PROGRAM



C. Goals:

The project aims to develop expertise within the Peace Corps to enable the agency to plan and implement an organized series of renewable energy projects. The project also aims to raise host country awareness of renewable energy issues and to develop host country capability to plan small-scale renewable energy projects.

Achievement of these goals can be measured by:

- The number of trained volunteers working in renewable energy/appropriate technology projects.
- The number of potential renewable energy projects identified.
- Revised alternative energy training model for Peace Corps and host country use.
- Development of statistical tables on use of non-commercial fuel in rural areas.

Part III - Project Analysis

A. Technical Analysis:

In order to design and implement reasonable renewable energy projects, sufficient reliable data on energy use and trained technicians to supervise projects are needed. The energy survey and training program are designed to provide data for the selection of projects and qualified managers who are trained in energy analysis.

Sufficient information is not yet available to determine the reaction of host countries to this project. However, previous renewable energy projects undertaken by PCVs have been supported by host countries, e.g., the methane gas project in Nepal. The Overseas Development Council is actively involved in the project and has coordinated the financial participation of the al Dir Iyyah Foundation.

B. Financial Analysis and Plans:

The budget outlined below covers twelve months. It includes funds for program development, survey questionnaires, international travel of specialists, in-country travel and training of PCVs, project identification, training materials and hardware and projected administrative costs. The budget does not include costs for designing the survey questionnaire, costs which are covered by a grant from the al Dir Iyyah Foundation, nor does it cover the living allowances and related expenses of the PCs.

The largest element of the budget is the training program ($143,000). Expenses for the 6 specialists are the next largest cost ($66,000). The survey (minus design costs) will cost $41,400.

BUDGET SUMMARY

I	Program Staff		
	a. Washington Project Director/Coordinator	1	$ 20,000
	b. Secretary	1	10,000
	c. Technical Assistant (6 months)	0.5	8,000
	d. Specialists ($100/day X 60 days)	1.5	36,000
II	Travel and Accommodations		
	a. Travel for Specialists		12,000
	Travel for PCVs (25 PCVs X $50/PCV X 12 countries)		15,000
	b. Accommodation for Specialists		18,000
	Accommodation for PCVs Survey: 25 PCVs X $10/day X 5 days X 12 countries		15,000
	Training Program: 25 PCVs X $400/wk X 8 wks		80,000
III	Supplies and Materials		
	a. Cost of Survey Questionnaires		600
	b. Instrument Package		9,000
	c. Facilities/Supplies		1,800
	d. Training Site Hardware		25,000
	TOTAL		$250,400

C. Social Analysis:

Energy is an essential part of daily life. It affects everyone, regardless of economic or social status. The lack of national energy planning has contributed to overcrowding in urban areas. Renewable energy projects in rural areas can help ameliorate living conditions for the great bulk of the rural poor.

This project is not directly related to improvement in the life-style of women. However, any project which provides a reliable source of energy at reasonable cost would have beneficial impact on women who often are required to spend long hours in essential daily tasks such as drawing water, grinding grains or collecting firewood.

D. Environmental Analysis:

The only part of this project which will have an impact on the environment is the implementation of renewable energy projects at the end of FY 79. The training program will have an indirect impact in that the inter-relationships between energy use, natural resources and the environment will be discussed.

Project impact on the environment can be expected to be favorable as non-polluting energy systems will be stressed.

Part IV - Implenentation

A. Administrative Arrangements:

This project will be administered by ACTION/Peace Corps with funding from AID and supplemental funding from the al Dir Iyyah Foundation.

B. Implementation Plan:

The project will consist of three inter-related activities:

Activity I - Program development will last for 13 months, from September 1978 to September 1979. Specialists will be hired and trained during this period. They will spend November 1978 - January 1979 in the field identifying projects and training the survey enumerators. Upon their return in February 1979, they will identify and prepare renewable energy projects which PCVs will manage starting in September 1979.

Activity II - The energy survey will consist of identifying target countries in September-October 1978, selecting second-year PCVs in October 1978 who will collect the data designing the volunteer workshop which will be held during December 1978 and implementing the survey during the period December 1978 - September 1979.

Activity III - There are several parts to the training program which hopes to place qualified PCVs in the field by September 1979. Between October 1978 - February 1979, Peace Corps will develop a resource collection of material on renewable energy/appropriate technology. The training program design is scheduled for January - May 1979 with recruitment of PCVs during March - May 1979. The 3 month training program is scheduled to begin in mid-June with PCVs starting their assignments in September 1979.

C. Evaluation Plan:

Because this is relatively new programming area for Peace Corps, evaluation will be an on-going activity. AID participation in the project will end in September 1979 with the formal evaluation and revision of the training program. Peace Corps evaluation of the program can not be completed until the beginning of FY 82 when the PCVs will have completed their two-year tour.

AID will receive progress reports from Peace Corps as interim programming targets are reached. These targets include: completion of survey instrument (October 1978), identification of renewable energy projects and completion of training program design (February 1979) and end of training program (June 1979). AID will also receive copies of training materials and of the survey questionnaire. AID will receive a final training and survey evaluation in October 1979.

AID 10.J-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: Support to the Peace Corps Renewable Energy Program

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: To improve LDC capability to assess and manage their energy resources including the utilization of appropriate energy technologies and renewable energy resources.	Measures of Goal Achievement: Comprehensive national energy plans. More efficient use of local energy resources. Creation of institutions to implement renewable energy programs.	Reports of International Assistance Organization. Energy sector studies conducted by AID.	Assumptions for achieving goal targets: LDCs will actively support renewable energy projects. LDCs need assistance to develop their capability to design and implement energy programs
Project Purpose: To improve the capability of the Peace Corps to develop and implement small-scale renewable energy projects.	Conditions that will indicate purpose has been achieved: End of project status. Successful implementation of a variety of Peace Corps projects in renewable energy.	Peace Corps records. Studies of energy activities in LDCs. AID evaluation.	Assumptions for achieving purpose: Small-scale renewable energy resources can play an important role in providing energy for village and rural use in LDCs.
Outputs: Survey of energy resources and needs in rural areas. A cadre of Peace Corps Volunteers trained to undertake renewable energy The identification of a set of small-scale renewable energy projects to be implemented by Peace Corps Volunteers.	Magnitude of Outputs: Energy surveys of 300 rural villages in 12 countries. 20-30 Peace Corps Volunteers trained ---potential projects identified.	Progress reports and evaluation. Preparation of Program Instructional Material. Final report.	Assumptions for achieving outputs: LDC cooperation for choosing project sites and supporting activities.
Inputs: a) AID Financing of Project Costs b) Peace Corps Financing of PCV support costs. c) LDC participation in projects and financing PCVs. d) Contractor personnel.	Implementation Target (Type and Quantity) a) $250,400 b) Living allowances and related support assistance for 20-30 PCVs in training and 300 PCVs in residence in country. c) As necessary. d) Specialists (1.5 man years) Project Director (1 man year) Project Secretary (1 man year) Technical Assistance (.5 man years)	a) Vouchers b) Travel Plans	Assumptions for providing inputs: a) PASA with Action/Peace Corps. b) LDC support of PCV activities. c) Cooperation with villages in LDCs for data collection

DEPARTMENT OF STATE

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ACTION , INFO

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TO - PEACE CORPS COUNTRY DIRECTORS
A.I.D. MISSION DIRECTORS

AIDTO CIRCULAR # 199

AID/W

JOINT A.I.D./PEACE CORPS LETTER OF COOPERATION

We are pleased to forward the attached joint letter signed by Ms. Carolyn R. Payton, Director, Peace Corps, and Mr. John J. Gilligan, A.I.D. Administrator, initiating further cooperation between the two agencies.

Attachment: a/s

Distribution: Lists attached

VANCE

PPC/PB:ABHerrick PPC/PB 22088 4/26/78 AA/PPC:AShakow

See list attached. (List #1) SER/MP/Two:WJFradenburg

UNCLASSIFIED

CAUTION - Remove protector sheet before typing

Agency for International Development & Peace Corps

April 3, 1978

Dear Director:

Since the Peace Corps was started there has been a strong sense that it should not be too close to the official U. S. establishment overseas, including AID. There is a good deal to be said for this concern on the Peace Corps' part, and we both believe that the very special character of the Peace Corps must not be lost. But we also believe there is a great deal more that Peace Corps and AID can do together to foster our mutual goals--goals which are much closer together now that AID's "new directions" legislation has really taken hold. We now share a common interest and concern in responding to basic human needs in such areas as rural development, health, and education. In close collaboration with the host government, AID (directly or through a PVO or other source) can furnish the necessary financial resources and senior technical capability, while the Peace Corps can provide needed skills at the local or regional level to help ensure lasting project success.

This letter is intended to spur AID and Peace Corps field directors to accelerate and expand the effort to find constructive ways of enhancing the effectiveness of our programs--just as we have already started to do in Washington. And the process should be eased now by the fact that there are at present, hundreds of ex-PCVs serving as AID officers, many ex-PC staff in key AID jobs in Washington and abroad, and ex-AID staff returning to Peace Corps staff as well.

In fact, despite pressure to avoid close association, a recent survey of Peace Corps programs suggests that PCVs participate in AID-supported programs in about 30 of the 36 countries where we both have field missions. Here are a few examples:

Sahel - Drought Relief: Major assistance was furnished by AID to the Sahelian countries during and after the severe drought of 1972-73. Peace Corps Volunteers played a major role in organizing and carrying out this assistance at the local level. At present, Volunteers and AID Missions are coordinating their efforts in a variety of projects to prevent a recurrence of the devastating effects of prolonged drought.

Ecuador - Small Business Project: AID is seeking to increase agricultural production and productivity through a broad variety of activities, including basic and applied research, seed production, new varietal testing, farmer test plots, production kits, and other supporting activities. Through local agreement between AID and the Peace Corps, Volunteers with an agricultural background have been recruited and placed at research centers, farms, and field test sites. There they work with specialists, extension agents, and local farmers to extend the range of testing beyond the research centers. Their contribution enhances the outreach capability of the project and provides a valuable feed-back channel to alert AID project managers to difficulties or new ideas for modifications to increase effectiveness.

Nepal - Biogas Research: AID and the Peace Corps are jointly engaged in a research project to test the feasibility of using local materials to make less costly and more efficient generators for use at the village level. Volunteers living in the villages test both the utility and acceptability of the technology, i.e., its appropriateness, before wide-scale introduction is undertaken.

Tunisia - Well Restoration: Using funds provided by AID, CARE, which is administering this project, is using Volunteers to assist in the implementation of the project by supervising and assisting local craftsmen in the restoring, cleaning, and repairing of wells. After restoration, Volunteers provide nutrition and sanitation training to villagers in the vicinity of the wells.

Philiprines - Nutrition Education: Technical specialists are provided by AID to the National Nutrition Center along with funds for training provincial nutrition program administrators. Volunteers are assigned to these administrators to assist them in organizing and conducting nutrition-related activities at the local level and also assist in the collection of data to be used for management and project planning.

Philippines - Fisheries Project: AID is supporting an extension project by providing grants through the Philippines Bureau of Fisheries. Peace Corps Volunteers have been assisting both AID and the Bureau of Fisheries by working as team leaders.

El Salvador - Health Sector Assessment: Two Volunteers conducted comprehensive studies on the effect of insecticides and breastfeeding practices as part of the health and nutrition sector assessments currently in preparation by the AID Mission.

These constitute a small sampling of the kinds of projects jointly carried out by AID and the Peace Corps. They reflect the wide diversity of areas in which cooperation is both feasible and desirable.

We would like to bring AID and the Peace Corps into closer contact from the very beginning of the project planning cycle to ensure that Peace Corps and AID resources are considered when program plans are designed, developed, and implemented. Although the preparation and review process for regular AID projects tends to be lengthier than the usual Peace Corps schedule, participation in some circumstances by the Peace Corps might well serve to increase project effectiveness and provide particularly satisfying PCV job assignments. (Attached, for those who may not be familiar with it, is a brief summary of the AID project preparation and review cycle.)

In those countries where joint program efforts currently exist, we urge AID officers and Volunteers to seek additional opportunities for cooperation and coordination. In those countries where this type of programming does not exist, we encourage you to place high priority on exploring ways in which joint programming can become a reality.

To establish the framework for a better analysis of current coordination efforts and to help develop guidelines for future close cooperation, we suggest that an informal joint AID/Peace Corps programming committee be established in all countries where both programs exist. This group would review the current and planned program strategies and activities for each organization and seek to identify (a) areas of possible cooperation, (b) a timetable for putting these joint efforts into effect, and (c) the resources or decisions required to proceed with joint program development.

By September 1, 1978, if such a plan is developed, a joint report should be submitted simultaneously to the appropriate AID Assistant Administrators and Peace Corps Regional Directors. Based on these reports, we will take the necessary steps to institutionalize cooperative programming efforts at the headquarters level, and if necessary, to develop specific guidelines for AID/Peace Corps cooperation in the field.

We would welcome interim comments from both Mission Directors and Country Directors and look forward to receiving your full reports in September.

Sincerely yours,

Carolyn R. Payton
Director of Peace Corps

John J. Gilligan
AID Administrator

Attachment: a/s

PROJECT DEVELOPMENT CYCLE FOR FY 1980

BEGINNING OCTOBER 1, 1979

Any time	Project idea germinates in the field. - Project Identification Document is developed.
May 15, 1978	Annual Budget Submission (ABS) to AID/Washington (AID/W). - Includes project description.
May - July 1978	Bureau reviews ABS. May advise field mission.
September 1978	Budget submission to OMB assumes a a strategy that includes the project.
July 1978 - July 1980	Project development and design. Project Paper (PP) is approved.
February 1, 1979	Congressional Presentation - Project is described on activity data sheet.
October 1, 1979	Obligation of project funds can begin.

936-5711

OPTIONAL FORM NO. 10
JULY 1973 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Research and Development Committee Members **DATE:** OCT 2 1978

FROM : DS/PO, Robert C. Simpson

SUBJECT: Project Review Meeting - October 12, 1978

A project review meeting on the Peace Corps Renewable Energy Project will be held October 12, 1978 - 2:00 PM in Room 3886 N.S. The meeting will be chaired by Mr. Sander Levin, AA/DS.

Any questions or comments may be relayed to Mr. Erick Melby, DS/EY (235-1720) or Mr. L. Prosser, DS/PO (235-8968).

Attachments: a/s

(See attached list for distribution)

DISTRIBUTION FOR DSB PROJECT REVIEW COMMITTEE MEETING

A. Core Members

AFR/DR, John Koehring (2 sets)
ASIA/TR, M. Aloyse Doyle (2 sets)
LAC/DR, William Feldman (2 sets)
NE/TECH, E. Keys MacManus
PPC/DPRE, Edward Hogan

B. Core Alternates

LAC/DP, James Hanks
NE/PD, Worth Fitzerald

C. Correspondence Members

CM/COD, R. J. O'Brien
PPC/PB, Ain Kivimae*
GC/TF&HA, A. Richstein
EEO, R. Robinson*
PPC/WID, A. Fraser
OMB, Ed Sanders

C. DSB

AA/DS,	S. Levin
DS/MGT,	D. McMakin*
DS/PO,	R. Simpson
	B. Chapnick
	K. Milow
	L. Heilman
	C. Molfetto
	Analysts (as appropriate)
DS/PO/RES,	M. Rechcigl
DS/DIU,	M. Brown*
	R. Gaul
	J. Hafenrichter
DAA/FN,	E. Babb
DS/AGR,	L. Hesser*
	M. Mozynski*
DS/RAD,	H. Hobgood*
DS/N,	M. Forman*
DS/XII,	E. Long*
DAA/DT,	J. Bruce
	D. Rhoad
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DS/H,	P. Kimm*
DAA/HRD,	S. Joseph
	R. Meehan
DS/HEA,	L. Howard*
DS/EH,	R. Schmeding*
DS/POP,	R. Ravenholt*
DS/IT,	J. Goodman*
DS/PO/RES,	E. Stephen (DSB Review files

*Attachment (s) on request

9/21/78

UNITED STATES GOVERNMENT

Memorandum

TO : Members, DSB Project Review Committee **DATE:** October 2, 1978

FROM : DS/PO, Robert C. Simpson BCS/pt

SUBJECT: Issues Relative to Energy Office PP for a PASA with Peace Corps

This project paper has three primary objectives:

To collect energy use data in rural villages;

To identify sites for demonstrations of renewable energy technology;

To develop a training module which will enable the Peace Corps to train volunteers in the establishment and operation of demonstrations of renewable energy.

There is little disagreement in regard to the latter two objectives. The Peace Corps already has some ongoing renewable energy projects, some AID supported. With regard to the first objective, the Program Office believes there are some unresolved methodological problems.

The proposed survey in 12 countries will produce data of limited usefulness. This is due not so much to the size of the sample as to the manner in which the survey sites and respondents will be selected.

One solution might be to make the purpose of the activity, itself, the development of a methodology for energy use analysis and renewable energy resources assessment. There appears to be a valid need to develop such a methodology.

It might be possible to reduce the geographic scope as well as the number of social and economic variables to be measured and, by narrowing the focus, to improve the quality and usefulness of the data that is collected. The savings thus accrued could be applied to improving the technical quality of a more limited, but more representative, sample.

Whether that solution is accepted or not, it would appear to be desirable to bring additional survey and sampling expertise to bear on the design of the survey instruments and the data collection/analysis plans. It may also be advisable to bring in additional energy consultants for aspects of the project.

Subsequent to the preparation of the PP and the supporting documents that make up this package, discussions have been held between the Program Office, the Energy Office and the Peace Corps. The tenor of these conversations suggests a willingness of the interested parties to accept design modifications in the interest of achieving a mutually acceptable solution to meet the several agency requirements.

In arriving at judgments or choices among the alternatives open to AID in this project, it should be emphasized that the primary purpose of this relatively small project is not to conduct a world survey but to encourage Peace Corps interest and involvement in the worldwide search for new and renewable energy sources and to fund initial training of selected volunteers to work with rural communities in these efforts. With that discrete purpose in mind we would not wish to burden this PASA with too elaborate a research methodology. At the same time, the survey, if conducted, should be so structured as to produce dependable data.

Addendum to Peace Corps Renewable Energy Project Paper

26 September 1978

A. Background to Project

AID and the Peace Corps have cooperated in several development projects in various countries overseas. The beneficial results of such cooperation were cited by House Committee on International Relations in its report on the International Development & Food Assistance Act of 1978: "AID's close coordination with both the Peace Corps and PVOs appears to the Committee to represent a viable method of strengthening AID's project implementation capability." (p 6) Section 119 of the Foreigr Assistance Act authorizes the President to furnish assistance "for cooperative programs with developing countries in energy production and conservation, with particular emphasis on programs in research and development, and use of small-scale, decentralized, renewable energy sources for rural areas...."

The proposed PASA with Peace Corps fulfills two objectives mentioned above, i.e. to increase cooperation with the PC and PVOs and to develop small-scale renewable energy programs. The Peace Corps is a government-sponsored effort to place trained Volunteers in rural and urban development projects in developing countries. Although Peace Corps has worked closely with AID, it is a separate government agency.

This PASA is essentially a grant to the Peace Corps to enable it to develop a renewable energy program as part of its overall and worldwide development program. Although the survey will cover approximately 300 villages in 12 countries, the survey is not a global effort assessing renewable energy needs worldwide. In effect, the project will consist of 12 national surveys which will provide the Peace Corps with data to develop specific national energy programs within those specific environments. (See Tab A for list of countries in which Peace Corps is active.)

AID and the Overseas Development Council will benefit indirectly from the project. AID Field Missions will be able to utilize the services of PCVs trained in renewable energy technologies and who have specific operational experience. AID can also avail itself of the energy use data for assistance in preparing a variety of AID-sponsored projects, either bilateral or centrally funded.

The Overseas Development Council is an independent, non-profit organization established in 1969 to increase American understanding of the economic and social problems confronting developing countries and to the importance of these countries to the United States in an increasingly interdependent world. The ODC seeks to promote coordination of development issues by informing the American public, policy makers, specialists, educators and the media through research, conferences, publications, etc. The ODC will analyze the survey results and prepare a final report on energy use in the selected developing countries.

B. Project Organization

The project coordinator is Paul W. Jenkura, a staff member of the ODC seconded to the Peace Corps. Mr. Jenkura has extensive experience as a coordinator/trainer in developing countries, particularly in Africa and was a PCV in Ethiopa working on rural agriculture development. He is a former Vice-President of the McCombs Solar Company where he was responsible for the design and manufacture of solar systems.

The survey instrument was designed by Paul Jenkura. A draft copy of the instrument is in TAB B. The survey will be conducted in 12 countries and in 25 villages in each country. Selection of the 12 countries will be made primarily on the bases of expressed host country and Peace Corps Mission interest. If more than 12 countries indicate strong interest, a geographical selection will be made. To date, Nepal, Ecuador, Chile, El Salvador and some of the Pacific Islands have expressed strong desire to participate.

The criterion for the selection of the PCVs is a minimum of eight months residence in a rural village. This survey is designed as a secondary activity for the Volunteers; it will take 8 or more hours a week to collect the data plus more time in the beginning of the survey to identify and recruit the families, farmers and business people for the survey. Volunteers in the field will be introduced to the survey by an in-country workshop (3-5 days) sponsored by Peace Corps.

Upon completion of the survey, the Overseas Development Council will be responsible for analyzing the results and preparing a final report depicting the patterns of energy uses in rural villages by family units, communities, countries and LDC's in general. This report and the survey instruments will be made available to participating governments, energy-conscious host country organizations and to agencies involved in international development. It is anticipated that requests for feasibility studies for specific PC projects will develop in many communities where the survey takes place.

Peace Corps Countries (63)

African Region (24)

Benin
Botswana
Cameroon
Chad
Central African Empire
Gabon
Gambia
Ghana
Ivory Coast
Kenya
Lesotho
Liberia
Malawi
Mauritania
Niger
Rwanda
Senegal
Seychelles
Sierra Leone
Swaziland
Togo
Upper Volta
Zaire

Latin American Region (21)

Belize
Brazil
Chile
Colombia
Costa Rica
Dominican Republic
Eastern Caribbean Area
.Antigua
.Barbados
.Dominica
.Grenada
.Montserrat
.St. Kitts-Nevis
.St. Lucia
.St. Vincent
Ecuador
El Salvador
Guatemala
Honduras
Jamaica
Nicaragua
Paraguay

NANEAP Region (18

Afghanistan
Bahrain
Fiji
Gilbert Islands
South Korea
Malaysia
Micronesia
Morocco
Nepal
Oman
Philippines
Solomon Islands
Thailand
Tonga
Tunisia
Tuvalu
Western Samoa
Yemen

Source: PCVS, PC/M

4/11/78

AB/gsb

TAB B

DRAFT

ENERGY SURVEY FOR THIRD WORLD VILLAGES

sponsored by

PEACE CORPS and the OVERSEAS DEVELOPMENT COUNCIL

(The instrument will be housed in a loose-leaf ring binder and will contain the necessary number of copies of each section for each survey unit for one year. In addition a reference section will be included which will define terms and give backgrounds on energy/renewable energy.)

ENERGY SURVEY DRAFT

The energy survey is designed to collect data on energy uses in rural villages in the Third World and to identify potential for utilization of renewable energy in those villages. The purposes of the study are designed to: 1) raise the consciousness of the people involved--villagers, HC officials, PCVs; 2) provide base-line data to assist Host Countries to develop energy programs and to enable international development organizations to include data on non-commercial fuel into worldwide energy projections/ studies; and 3) involve PC more fully in the field of energy utilization and conservation.

SURVEY DESIGN

The survey is scheduled to start this Fall and will be conducted over a one-year period by second year Volunteers. It will operate at three levels. In assessing current energy uses, the focus will be on patterns of energy use for selected families around their domestic needs for cooking, heating, lighting, washing and grinding. For this part of the survey, families with different patterns of consumption (e.g., farmers, government officials, teachers) will be considered. Measurement of the amount of fuel consumed by the family will be done either directly or be made by indirect estimate (e.g., a bundle of wood of such a size weighs approximately such as amount). There will also be a focus on energy needs for non-domestic uses: on agriculturally-related activities (preparation of land, irrigation, harvesting, threshing, crop drying) and small business-related activities (bakeries, restaurants, bars, tea shops).

The third level of the study will gauge the amount of biomass available for gasification and make an estimate of wind and water power in the area.

(Calculations of solar insolation will be made from existing meteorological data.) This part of the study will give an indication of what local renewable energy sources may potentially be tapped and where further, more sophisticated measurement might be called for.

The goals of the energy survey are:

- to provide data about the energy needs of people living in rural communities throughout the Third World;
- to provide quantitative information on sources of renewable energy in selected areas of the Third World;
- to increase the awareness of local people, host country officials, and PC Volunteers about the use of energy and the potential for introducing alternate forms of energy production in their communities.

SURVEY METHODOLOGY

The survey is designed to collect data at various time intervals--quarterly, monthly, weekly, daily. The breakdown of collection frequency for each section of the survey is as follows:

Quarterly: Village Data
Agricultural Energy Uses
Renewable Energy--Biomass
Renewable Energy--Water
Renewable Energy--Wind, Part I

Monthly: Fuel Data
Time Period
Domestic Energy Use, Part I
Crafts/Trades/Shops, Part I

Weekly: Domestic Energy Use, Part II

Crafts/Trades/Shops, Part II

Daily: Renewable Energy--Wind, Part II

The survey seeks to construct an energy-use profile for each village that is being studied. It plans to do this through an indepth study of selected village families, farmers and businesses, and to obtain a measure of the representativeness of these groups to the make-up of the village as a whole.

For the Domestic Energy Use section, five families need to be identified/recruited for participation in the study. Families with different patterns of consumption will be selected from the village, e.g. 2 farmers, 1 school teacher, 1 shop keeper, 1 government official.

The Domestic Energy Use section has two parts to it. Part I information will be collected on a monthly basis and Part II information will be collected on a weekly basis for each selected family. Each month Part I will be filled out new, while information for Part II is recorded on an "on-going" form.

For the Agricultural Energy Use section, three farmers need to be identified/recruited for participation in this study. Farmers with different sizes of farming operations will be selected, e.g., 2 small farms and 1 large farm or 1 small, 1 medium and 1 large farm. The information about each farmer is recorded each quarter on its own individual form. (If major changes occur during the quarter to the farming operations, e.g., farmer works twice/half the amount of land originally noted, record these changes on a separate sheet of paper, note the data and add it to that quarter's forms for that farmer.)

For the Crafts/Trades/Shops Energy Use section, 3 businesses need to be identified/recruited for participation in the study. Businesses engaged in different activities will be selected, e.g., a restaurant, a bar, a bakery.

There are two parts to the Crafts/Trades/Shops section. For each selected business, Part I information will be collected on a monthly basis and Part II information will be collected on a weekly basis for each business. Each month, Part I will be filled out new, while the information for Part II is recorded on an "on-going" form.

VILLAGE

The objects of this section are to identify village characteristics and the representativeness of the selected participants in the survey to the village as a whole. The purpose of this latter part is to obtain a profile of the village. With a basic familiarity with village life, the data for this section can be obtained through observation and interviews. Please make your best approximation in answering some of the following questions.

1) What is the population of the village and surrounding area?

_____

2) What % of the families in the area is engaged in small scale farming?

_____

_____

3) What % of the families in the area is engaged in cottage industries/small business?_____

_____

4) There are in the village approximately how many:

Restaurants?_____

Bars/Teashops?_____

Bakeries?_____

5) Is the village on a major trade route in country?

_____

6) Does the village hold a major market for the area?

_____

7) Is electricity used in the village?

_____

8) For what activities/functions is the electricity used?

_____

VILLAGE (Continued)

DRAFT

9) For how long during the course of a day is the electricity available?_____

_____

10) Are there existing cooperatives/cooperative-type groups in the village?_____

If yes, for what activities?_____

11) Is the land worked cooperatively?_____

_____

12) Briefly describe the geographical conditions of the village. (Terrain, vegetation available water, climate)

_____

_____

_____

_____

_____

DRAFT

FUELS

The object of this section is to identify types, quantities, sources and prices/values of fuels available in the village area. This data is obtainable through market investigation, observation, and interviews with sellers and consumers. Please answer as fully as possible the following questions.

1) What fuels are sold in the market place?

firewood _____

charcoal _____

dung _____

kerosene _____

candles _____

other _____

_____

2) How are these fuels sold? (by bundle, kilo, liter, etc.)

firewood _____
charcoal _____
dung _____
kerosene _____
candles _____
other _____

_____

3) What is the cost of a unit of each fuel?

firewood _____
charcoal _____
dung _____
kerosene _____
candles _____
other _____

_____

4) Are there times when these fuels are not available in the village? which fuels?

_____

_____

5) Have prices for these fuels been rising faster than prices of other staples (sugar, salt, matches, etc.)?

6) Have some fuel prices risen faster than others? which ones?

7) If firewood is used, how far away does it come from?

8) Would people prefer to use different fuels if they could afford them? If they were available? which ones?

DOMESTIC ENERGY USES:

The object of this section is to identify current domestic energy uses, the types of fuels used, amounts, frequencies, and the values of these fuels. For each of the selected families complete Part I of this section on a monthly basis and Part IIon a weekly basis. Make sure to properly identify each part of this section with the code number for each family participating in the survey. Most of the data to answer the questions can be obtained through observation and/or interviews with the family. There will be some measurements made of the amounts of these fuels. Please answer as fully as possible each of the following questions.

Survey Participant number --------

PART I

FAMILY UNIT

1) How many people live in the household being considered?

_____

2) What is the breakdown of the household members by age?

by sex?

Sex	Age (Approx.)
___	___
___	___
___	___
___	___
___	___

3) For the time period under consideration, did the size of the household remain the same? Fluctuate, by what amount?

_____

_____

4) What is the primary source of income for the household?

_____

5) Are there secondary sources of income for the household?

Identify them._____

_____

6) Do the young people/children perform economic (income generating and non-income generating) services for the family? If so briefly describe. _____

_____

DOMESTIC ENERGY USES: (Continued)

7) Describe the physical living arrangements of the household?_____

_____

_____

_____

COOKING

1) How often do people eat meals a day?_____

_____

2) How often is food cooked a day?_____

_____

3) What time of the day is the cooking done?_____

_____

4) What amount of time is spent in cooking each day?_____

_____

5) Who does the cooking?_____

_____

6) Describe the domestic cooking facilities._____

_____

_____

7) Describe the cooking utensils/vessels._____

_____

_____

8) What kinds of foods are cooked? approximate % of each?

grains_____
legumes_____
vegetables_____
Meats_____
fish_____
other (specify)_____

9) Indicate how these foods are cooked (boiled, fried,

DOMESTIC ENERGY USES: (Continued)

baked, broiled, roasted).

grains_____
legumes_____
vegetables_____
meats_____
fish_____
other_____

10) What fuel(s) is used for cooking?_____

_____

11) Is the fuel purchased or collected by household members?

_____

12) Who in the family is responsible for procurring the fuels used?

_____

HEATING

1) Is there a need for heating the house during this period?

_____

2) When during the day/evening is the heating needed?

_____

3) How long during the day/evening is the heating needed?

_____

4) Describe the domestic heating facility.

_____
_____
_____
_____

5) Who in the household generally is responsible for seeing that the heating needs are met?

_____

6) What type of fuel is used?

_____

7) Is the fuel purchased or collected by household members?

_____

LIGHTING

1) How are needs for lighting met in the household? (candle, firewood, kerosene lamp, propane lamp)

_____

2) For what activities in general is the lighting used?

_____

_____

_____

3) For what period of time is the need for lighting each evening?

_____

_____

4) Is the fuel for lighting purchased or collected by household members?

_____

WATER

1) Where does the family unit obtain its water? (stream, well, pond, rainfall)

_____

If from more than one source, what % approximately from each?

_____

2) Who collects the water?

_____

3) How is it stored?

_____

_____

4) Is there a cost for water? if so how much, for what amount?

_____

5) Water that is used for drinking--is it filtered? _____

is it distilled? _____

is it treated another way? _____

6) Is there an obvious need for or concern about the quality of potable water?

_____

7) What water is used for washing clothes?

_____

8) Is water heated that is used for washing
people? _____
cooking/eating utensils? _____
clothing? _____

9) What amount of water is heated? (in gals. or liters per day)

_____

10) How many days a month is water heated?

_____

11) What fuel is used to heat it?

_____

12) Is the fuel purchased or collected by household members?

_____

GRINDING

1) What crops are ground?

_____

2) How are they ground? (What equipment is used?)

_____
_____
_____

3) If the grinding is done commercially, what is the cost?

_____

4) How often is the grinding done?

5) What distance is travelled to get grains ground?

DOMESTIC ENERGY USE

Survey Participant Number _____

Part II

The object of this part is to record on a weekly basis the types, amounts, and values of fuels used to meet domestic needs for cooking, heating, lighting, washing, and grinding? Please measure and record the quantities of each fuel used for each function; state the time period in terms of dates, e.g. 1/7/79 to 1/14/79

TIME PERIOD	FUNCTION	TYPE OF FUEL	QUANTITY	VALUE

AGRICULTURAL ENERGY USES

The object of this section is to identify in the agricultural activities for the selected farmers the types of energy, the equipment, tools, and personnel used. This data is to be recorded on a quarterly basis. However, please record changes that take place during the course of the Quarter, e.g., more land/less land is actually worked than previously expressed; a fertilizer is tried during the Quarter, etc. Record the change on a separate sheet of paper noting the date and include this paper with the forms for that Quarter. This data can be obtained through interviews with and observations of the selected farmers. Please code each page with the proper number for the farmer being surveyed.

Survey Participant #

WORKING THE LAND

1) How is the land prepared for the advent of crops? (plowing, discing, harrowing)_____

_____

_____

2) Name and describe briefly the equipment and tools used?

_____

_____

_____

3) If a commercial fuel (gasolene, kerosene) is used in working the land, how much is used? What does it cost?

_____

4) Where in relation to the household is the land that is being worked located? (next to it, less than a kilometer away, 1-3 kilometers away, etc.)_____

_____

5) How many times a year are crops planted?_____

_____

6) What is the approximate size of the land being worked?

_____

7) How many people work this land?_____

_____

8) Is a fertilizer added to the soil? What one?

_____

_____

9) What is the cost for this fertilizer?_____

_____

10) What crops are planted?_____

_____

11) Is a household garden planted in addition? What crops?_____ _____

_____

12) How often is weeding performed during the growing cycle? Who does it?_____

_____

13) What equipment/tools are used?_____

_____

IRRIGATION

1) Is irrigation used on the land?_____

_____

2) What is the source of water for the irrigation?

_____

3) What method of irrigating the fields is used?_____

(flood, barrow, trickle sprinklers) _____

_____

4) What type of equipment is used?_____

_____

_____

5) How often is the land irrigated?_____

_____

RENEWABLE ENERGY

Name_____
Village _____
Country_____

Water Measurement

1) Is there a stream/river in or near the village?

2) What is the cross-sectional area?

3) What is the flow rate?

4) What is the available head?

5) Does the stream run continuously throughout the year?

6) Have there been times in the past when the stream was dry?

7) How is the stream being presently used by the villagers?

DRAFT

6) Approximately what amount of water is used to irrigate the fields?_____

_____

7) What % of the farmers in the area irrigate their field

_____

8) Who is responsible for the irrigation system?

_____

HARVESTING

1) What crops are harvested?_____

_____

_____

2) Are they harvested at one time? over time? which crops?_____

_____

_____

3) How are they harvested? (What equipment/tools are used?)

_____

_____

_____

_____

4) How many people harvest the field?_____

_____

5) How long does it take to harvest the field?_____

_____

THRESHING

1) What crops are threshed?_____

_____

_____

2) How are they threshed? (What equipment/tools are used?)

_____

_____

_____

3) How many people are needed to do the threshing?

_____

4) How long does it take to thresh the yield?

_____

DRYING

1) What crops are dried? _____

_____

_____

2) How are they dried? _____

_____

_____

3) Is any special equipment used in the drying process? Describe. _____

_____

4) How long does it take to dry each crop? _____

_____

STORING

1) What crops are stored? _____

_____

2) How are they stored? (describe storage facilities)

_____

_____

_____

3) Are they stored for personal use? for future market?_____

_____

4) How long are they stored?_____

_____

5) What %. of the crops are spoiled in storage?____

_____

GRINDING

1) What crops are ground?__ _____

_____

2) How are they ground? (what equipment is used?)

_____

_____

3) Who does the grinding? _____

_____

_____

4) How often is the grinding done?

_____

5) If the grinding is done commercially, what is the cost?

_____

6) How are the ground grains stored?

_____

_____

_____

CRAFTS/TRADES/SHOPS

The object of this section is to identify the uses of energy, fuel types, amounts, frequencies, and values of those fuels. For each business complete Part I of this section on a monthly basis and Part II on a weekly basis. Make sure to properly identify each Part of this section with the code number for each business participating in the survey. Most of the data can be obtained through observation and interviews with the proprietors. Some measurement of fuels will be necessary. Please answer as fully as possible the following questions.

Survey Participant Number _____

What type of activity is the business engaged in?

restaurant _____
bar/tea shop _____
bakery _____
other _____

This business serves approximately how many people a day?

_____

COOKING

1) How often is food cooked a day?

_____

2) What time of day is the cooking done?

_____

3) What amount of time is spent in cooking each day?

_____

4) Describe the cooking facilities.

_____
_____
_____
_____

5) Describe the cooking utensils/vessels.

_____
_____
_____

6) What kinds of foods are cooked?

grains _____
legumes _____
vegetables _____
meats _____
fish _____
other(specify) ___
_____

7) How are they cooked? (boiled, fried,baked, broiled,roasted)

grains _____
legumes _____
vegetables _____
meats _____
fish _____
other(specify) ___
_____

8) What fuel(s) is used for cooking?

_____

9) Is the fuel purchased or collected by a business member?

_____

HEATING

1) Is there a need for heating the building during this period?

_____

2) When during the day/evening is the heating needed?

_____

3) How long is the heating needed?

_____

4) Describe the heating facility.

_____
_____
_____
_____

5) What type of fuel is used?

_____

6) Is the fuel purchased or collected by a business member?

_____

LIGHTING

1) What type of apparatus is used for lighting? (candle, kerosene lamp, propane lamp)

_____

_____

2) For what period of time is the need for lighting each evening?

_____

3) Is the fuel for lighting purchased or collected by a business member?

_____

WATER

1) Where does the business obtain its water?

_____

2) Who collects the water?

_____

3) How is it stored?

_____

_____

4) Is there a cost for water? if so how much for what amount?

_____

5) Water that is used for drinking

is it filtered? _____

is it distilled? _____

is it treated in another way? _____

_____

6) Water that is used for washing cooking/eating utensils-- is it heated?

_____

7) What amount of water is heated? (in gals. or liters per day)

_____

8) How many days a month is water heated?

_____

9) What fuel is used to heat it?

_____

10) Is the fuel purchased or collected by a business member?

_____

GRINDING

1) Is there a need for grinding grains in the business? What grains?

_____

2) How are they ground? (What equipment is used?)

_____

_____

3) How often is the grinding done?

_____

4) If the grinding is done commercially, what is the cost?

_____

DOMESTIC ENERGY USE

Survey Participant Number _____

Part II

The object of this part is to record on a weekly basis the types, amounts, and values of fuels used to meet business needs for cooking, heating, lighting, washing, and grinding? Please measure and record the quantities of each fuel used for each function; state the time period in terms of dates, e.g. 1/7/79 to 1/14/79

TIME PERIOD	FUNCTION	TYPE OF FUEL	QUANTITY	VALUE

TIME PERIOD (one month)

The object of this section is to identify seasonal and cultural factors that potentially affect the uses of energy in the village. The time period under consideration is one month. This one month period needs to coincide with the collection of the other data that you are recording on a daily, weekly, and/or monthly basis. Therefore please complete this section at the end of the period after you have recorded the other information. The data for this section can be obtained through observation and interviews. Please answer as fully as possible the following questions.

1) What season of the year does this period fall within?

_____

2) What have been the weather conditions during this period?

hot-dry _____
hot-rainy _____
mild-dry _____
mild-rainy _____
cold-dry _____
cold-rainy _____

3) Did these weather patterns affect the "normal" course of activities in the village? in what way? (a greater or lesser need for fuel during this period?)

_____
_____
_____

4) Were there any major holidays/religious ceremonies during this period? How many of each? which ones?

_____
_____
_____
_____

5) What effect on the "normal" course of activities did they have? (a greater or lesser need for fuel during these occasions?)

_____
_____
_____

6) Is this a planting, growing, harvesting, or fallowing time agriculturally?

_____

RENEWABLE ENERGY

Name: _____
Village: _____
Country: _____

The object of this section is to assess the local potential for renewable energy technology to meet existing energy needs. This portion of the survey needs to be looked at in terms of being a pre-feasibility study, focussing on the necessary raw materials and geographical conditions. This data will require the actual measurement of physical properties, keen observation and a "tuned-in" sense of the village life. It is necessary to read/follow the procedures outlined in the instruction manual for this section before taking measurements. A number of the questions can be answered from observation and interviews/talking with villagers. This data needs to be recorded on a quarterly basis. Changes that occur during the quarter need to be noted on a separate sheet of paper with the date of change, and placed with the appropriate quarterly form. If you can't answer question(s) because of the geographical conditions, e.g. no streams in the area, indicate that on the appropriate page(s). Please answer as fully as possible the following questions:

Biomass:

1) Approximately how many domestic animals are in the area?

_____
_____

2) What kinds of animals are they? How many of each kind?

_____
_____
_____

3) How is dung presently being used?

_____
_____
_____

4) Who collects it?

_____
_____

5) Are there families who own 5 or more cows? Approximately how many families?

_____
_____

6) Are there stands of unused vegetation in the area?

_____

7) What is the approximate size of each of them?

_____
_____

Biomass (con'd):

8) What kind of vegetation is it?

9) Why are they left unused?

10) Is there arable land available that could be used to support biomass growth for a digester?

11) Is there a water source readily available in the area?

12) What is the average daily temperature during this period? Nightly?

13) What is the altitude from sea level of the village?

14) Is it possible in this area with its general soil type to dig a hole 9 ft.-12 ft. deep without great difficulty, i.e. running into rock 2-3 feet from the surface?

Name _____
Village _____
Country _____

RENEWABLE ENERGY

Wind:

1) Describe the topography of the village area.

2) What is the direction of the prevailing winds?

3) What is the highest gust of wind you recorded in the area during this period?

4) Do villagers consider this area to be windy?

5) What materials for tower construction are available in the village?
   Metal _____ Type/Size (e.g. 1/4" angle iron) _____
   Wood _____ Type/Name of Species _____

6) What materials for blade construction are available in the village?
   Glue _____
   Cloth _____
   Wood (Type/Name of Species) _____

7) What skills are available in the area for:
   Mechanical work _____
   Electrical work _____
   Working with wood _____
   Working with metal _____