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PROPOSAL FOR AN INTERNATIONAL PROGRAM
TO DEVELOP, TRANSFER, AND DIFFUSE LOW-COST ALTERNATIVE
ENERGY TECHNOLOGIES FOR RURAL AREAS OF THE THIRD WORLD

PART I. TECHNICAL PROPOSAL

Submitted to:
E.R. Backland
U.S. Agency for International Development
DS/EY Room 813 RPC
Department of State
Washington, D.C. 20523
(202) 235-1720

Submitted by:
Henry Norman, Executive Director
Volunteers in Technical Assistance, Inc.
3706 Rhode Island Avenue
Mt. Rainier, Maryland 30822
(301) 277-7000

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VITA ENERGY PROGRAM

PROPOSAL OUTLINE

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EXECUTIVE SUMMARY

VITA proposes to carry out, with Agency for International Development support, a comprehensive program to assist the rural poor by advancing the development, transfer, and diffusion of alternative energy technologies in the Third World. This program, outlined in the proposal, will accomplish its objectives through (1) expansion of VITA's existing technical assistance mechanisms, (2) promotion and development of a global alternative energy network, and (3) support, through a well planned small grants program, the ability of local implementing organizations to carry out successful rural energy efforts.

The VITA Energy Program is worldwide in scope, with the capability to reach out, tap into, and learn from the expertise being developed by government agencies, small businesses, private and voluntary organizations, church groups, universities, small projects, and large corporations. At the same time, the program will assist and support these diverse efforts through a series of effective outreach mechanisms aimed directly at relieving the constraints that currently hinder the successful development and dissemination of appropriate energy technologies.

These outreach mechanisms include on-site consulting by expert volunteers and staff, provision of technical documentation, by-mail technical assistance, publication of alternative energy manuals and bulletins, and advisory panels of energy experts. When added to the resources available through the small grants component and to the contacts and opportunities presented by the energy network, these mechanisms combine to give the VITA Energy Program the comprehensive scope and impact necessary to overcome to a significant extent many of the energy challenges facing the Third World's rural poor.

VITA is pleased to submit this proposal to the U.S. Agency for International Development. An AID/VITA partnership in the effort proposed here will enable both organizations to impact more directly and more meaningfully on the lives of the rural poor in the area of low-cost energy technologies based on renewable resources.

I. THE ENERGY PROBLEM

One of the most disturbing social and economic trends in the world today is the rising cost of conventional energy. The rapid growth in demand for energy in both industrialized and developing countries is straining existing supplies and has led to dramatic and unprecedented increase in prices. Against this backdrop, alternative energy technologies -- based on renewable sources such as sun, wind, water, bio-mass -- loom ever more important.

The need for access to low-cost energy alternatives is most acutely felt in rural areas of the developing world. Low incomes, shortages of skilled technicians, and lack of infrastructure in these areas have greatly restricted the introduction of conventional energy technologies. This lack of energy frequently serves as a roadblock to development in all sectors of rural life, thus contributing to the growing migration into already overcrowded cities where life seems better and where the limited employment opportunities available are at least free from much of the back-breaking toil associated with the agricultural sector.

For many reasons, then -- social, economic, political -- there is growing need to look to low-cost energy alternatives based on renewable sources. The overriding issue which must be addressed is the degree to which such low-cost energy technologies can provide viable alternatives and, therefore, can impact positively on the energy problem and on the lives of rural people. It is evident at this point that determining the applicability of alternative energy technologies -- be they solar cookers, windmills or improved wood stoves -- requires much more than determining technical feasibility alone; it requires looking into issues which range the political, social, and economic scale.

There is ample indication that the constraints on successful application of alternative energy technologies to development problems are very often not related solely to questions of whether a working technology exists or can be developed. Certainly there is no lack of proven low-cost technologies. Indeed, low-cost methods of tapping renewable energy sources have been widely known and used in the industrialized countries, in some instances for centuries.

Cheap, reliable windmills supplied much of the energy needed by American farms up until the introduction of central electrical grids and low-cost Middle Eastern oil in the 1930's and 1950's. Indeed, windmills are still a major source of rural energy in Australia and on Afrikaner farms in South Africa. Hydraulic rams, which require only the power of flowing water for operation, have lifted water on American farms for as long as 150 years without the need for major repair or parts replacement. Small tractors and "walking power tillers" have provided Japanese farmers with adequate energy for the most intensive, productive type of agriculture known. Small-scale hydroelectric generators, relatively inexpensive solar collectors and photovoltaic cells, methane digestors and other alternative energy technologies are becoming increasingly common all over the world and are no longer considered "experimental" or "unproven."

This is not to say that there are no purely technical questions remaining; obviously there are. Rather VITA wishes to state clearly, based upon 20 years of experience, that the energy problem as it relates to low-cost energy alternatives consists, in large part, of a series of constraints, or factors, which combine to work against the successful transfer and/or introduction of technology in developing areas. Here are just some of these constraints:

1. Key people in developing areas are unaware of the full range and potential of alternative technology options and do not have easy access to this type of information.
2. Much of the research and development work being done with alternative energy sources is carried out in small, isolated projects with little sharing of ideas or information between efforts.
3. People charged with the work of rural development, particularly those at the community and village level, are unaware of resources and services which exist, many of which are located within developing areas.
4. Approaches too often dwell on the problem of hardware to the exclusion of related social, environmental and economic factors.
5. There is a lack of developing-country-specific models for the successful introduction and use of alternative energy technologies.
6. Agencies and organizations in position to implement at the level of greatest impact lack the organizational structure to be effective. In addition to technical skills, successful technology introduction depends upon needs identification, resource assessment, project development, and management skills.

7. Funds are not available, or are available only for certain aspects of a project. Related to this is the fact that commercial lenders are likely to view alternative energy as experimental and are thus reluctant to make credit available.

Central to all of these constraints is a broader one. In many cases, and for many reasons, including those listed here, there is lack of a logical framework, or action plan, which focuses clearly on getting technology out of the workshop and laboratory and into homes, fields, and marketplaces. The fact that (1) there is limited knowledge of or access to mechanisms for doing this effectively, and (2) it is difficult to "popularize" technology combine to make it easier to focus on other narrow aspects of the effort. And in the cases where a well-planned approach does exist, the project often has to be tackled in pieces (and often in the wrong order) because funding is restricted to one or another aspect.

In spite of all the emphasis currently being placed on appropriate energy technologies there is far too little being done to support the ability of implementers to overcome these obstacles. Yet the ability of low-cost energy technology alternatives to make a difference -- to impact meaningfully and measurably -- in terms of income generation, job creation, increased productivity depends finally upon the ability of implementers in developing countries to overcome constraints such as those listed and to plan for and carry out diffusion activities.

II. THE RESPONSE

There is immediate need for a program structured specifically to assist implementing institutions in their efforts to overcome constraints to successful technology development, transfer and diffusion.

In the broadest terms, the goal of such a program would be to benefit the world's rural poor by bridging the gap separating alternative energy technologies from their practical application in the developing world. To attain this goal, the program should be structured to:

- Provide access to proven transfer mechanisms through which technical information can be collected, distilled, analyzed, passed on, and/or reviewed. Such mechanisms would include educational programs, publications development and distribution activities, technical information, provision of consultant expertise both in-person or by mail, training programs.
- Seek out and bring together a worldwide network encompassing all that is being done in the area of alternative energy technology, from research and development programs to commercial enterprise efforts. The program includes outreach to government agencies, local institutions, private and voluntary organizations, grass roots groups, rural entrepreneurs and small businesses, trade schools, and university-based research efforts.

This program will provide the impetus for a worldwide information system with the capability to tap into and receive input from existing systems. It will provide an information base from which it can look at what has been tried, what has failed, what is happening, who funds what type of efforts, etc., and it will be set up with a focus on extracting information in order to produce models for technology development and dissemination, to yield up-to-date project information, and to develop initiatives for further activities.

- Through grant-making capacity, (1) support the ability of groups to overcome constraints, and (2) reinforce a focus on diffusion and on getting technologies into the hands of the user through its stated guidelines and funding criteria.

These goals are grounded in Appropriate Technology, for from this concept and philosophy come the operating principles upon which the program activities will be based. To convey the full power of the concept, the phrase "Appropriate Development," may be more accurate -- it puts the philosophy and the technology into better perspective for the program described here.

Essentially, appropriate development consists of change occurring as a result of needs and actions generated from within a group, village, or society; it is meaningful, lasting development made possible through the use of technologies which, because they fit local contexts, spur further change. Such technologies:

- a. Are developed by or in concert with the various groups and individuals which make up the community in which the technologies are to be introduced;
- b. Promote job creation and meaningful work through the design and introduction of labor-intensive equipment and approaches, especially those involving decentralized, small-scale production units;
- c. Can be operated and maintained within the given community;
- d. Emphasize self-reliance through maximizing the use of local resources, materials, and expertise, and through the selective importation of foreign technologies which have proven appropriate;
- e. Can be afforded by the individuals, groups, businesses, or countries for which they are intended;
- f. Take into account all economic factors related to increased productivity before beginning a production enterprise;
- g. Are based upon local environments and ecological systems with minimal adverse impact on these systems; and
- h. Encourage community members to recognize and expand their own abilities, knowledge, and skills.

By working within this AT framework -- and by facilitating the adoption of this framework by others working in the energy field -- the energy program described here will have the multidisciplinary perspective necessary to deal with energy bottlenecks slowing rural development. For example, many alternative energy projects have focused only on the technology hardware. This has resulted in hostility on the part of some toward "gadgets." A worse result of this lack of perspective can be seen in the failure of many projects which in technical terms show good potential.

Any technology, be it high-cost, low-cost, energy-intensive or labor-intensive, cannot be introduced successfully without looking at that technology in terms of all the systems that surround it. What good is increased productivity if there are no markets? Why raise fish if people don't like to eat them? If introducing a windmill makes it possible to grow more crops, will most of the increase be lost due to lack of storage facilities? Simplistic? Perhaps it sounds that way -- but the obvious has happened far too often.

Another example is the need for increased energy in cultivation. From a narrow perspective the problem may be viewed solely as a technical one: how to till more land in less time and with less human physical effort? The narrow solution might be to develop a low-cost walking power-tiller. However this answer might not be sufficient if the purpose of the cultivation is weed control, (freeing the soil from the intense root systems of weeds is what "soil preparation" is largely about) perhaps a better solution would be to use herbicides or mulches to eliminate the weeds, thus making minimum or zero tillage possible. If zero tillage is to be practiced, however, an entirely different implement may be required, e.g. a rolling jab planter. The narrow focus could very well lead to development of a good, but relatively useless tiller. The broader focus, hopefully, will increase greatly the chances that the technology will be able to make a difference.

In order to provide a structure in which alternative energy technologies can have most potential for impact, there is need for a program, or framework, which has mechanisms, as outlined here, to respond to the system of constraints which is now limiting transfer of technology and technical information and the movement of these technologies from workshops and testing situations into fields, homes, villages, businesses.

VITA has designed such a framework. It is based on VITA's 20 years of development assistance experience and on proven program mechanisms.

The VITA program is designed specifically to:

- approach rural energy problems from a perspective which views development as a system of interrelated factors.
- collect, assimilate, and distill energy information -- both technical and programmatic -- from around the world and disseminate this information in usable form based upon proven notions about what makes the adaption process work...or not work.
- promote rapid diffusion of alternative energy technologies by assisting efforts which are focused on diffusion but which are held back by the lack of technical, financial, or management assistance.

By building and using the program wisely and by facilitating the adoption of this framework -- through promotion, assistance in project design, selective funding -- by others working in the energy field, the VITA Energy Program will ensure that an increasing percentage of the human, technical, and financial resources devoted to the development and dissemination of alternative energy technologies is concentrated in activities that have a better chance of succeeding and of being replicated.

III. THE VITA ENERGY PROGRAM -- AN OVERVIEW

In keeping with the need and problem defined here, VITA proposes a five-year Energy Program which has the following specific objectives:

- Retrieve, distill, and provide information on the widest possible range of tested, field demonstrated alternative energy technologies.
- Identify those alternative energy technologies most relevant to LDC needs and most diffusable in rural areas. VITA will then place priority on these and actively promote and seek to demonstrate the feasibility and effectiveness of such technologies.
- Establish an international alternative energy network which joins organizations and individuals, practitioners and researchers, funders and facilitators actively working to overcome rural energy bottlenecks. This network will enable the sharing of information, ideas, and resources on a scale commensurate with the scope of the problem.
- Reach out to all sectors involved in the issue to look for and begin to build 1) models of transfer efforts that have worked (and lessons from those which have not), 2) innovative, creative approaches to the challenge of diffusion.
- Support, with funds, initiatives which emanate from an appropriate technology focus and are focused clearly on diffusion.
- Place emphasis on extending the capability of local organizations to diffuse technology by first working to identify organizational needs and then by making available, as required and requested, appropriate management and programming supports -- thus placing priority on recognition of the importance of these factors in the diffusion process.
- Fund the efforts of organizations which are clearly seeking to overcome well-defined constraints to diffusion; for example, a research effort designed to make a working viable technology more culturally acceptable to local users, or still another seeking to refine a cookstove so that the food cooked on it will taste acceptable to consumers. In other words, technical research and development projects designed to relieve constraints to diffusion.
- Reach into the business sector to seek new ways and means of fostering involvement of the private sector -- to bring small business wisdom more directly to bear on the questions of development and dissemination.

- Seek maximum use of funds and of expertise by knowing who is doing what and where, and by actively promoting collaborative activities.
- Use program funds to support the ability of organizations to leverage other funds. For example, to fund the planning and **feasibility study, for an energy-related small business** effort so that it can be then taken to other organizations (say Appropriate Technology International in this case) for funding.
- Open and create as many channels for involvement of volunteer technical/management/systems experts as possible.
- Promote the broadest possible interface between appropriate technology initiatives within the US and other developed countries and those emanating from within developing areas.
- Maintain focus on the need to reach into the schools and educational structures to inform, to involve, to train.
- Support through all programming, the strengthening of capacity of developing country institutions to work with and through each other.

The VITA Energy Program, in order to meet these objectives, is built on VITA's existing capabilities. It is designed to extend those capabilities on a much-expanded level through administrative, service delivery and outreach structures which have been geared up for the program.

ADMINISTRATION

The VITA Energy Program will be administered as a separate VITA program arm; this will enable the effort to draw upon the core VITA program, to lend support back to the core (as do VITA's other efforts) yet to have the flexibility and autonomy necessary to move quickly.

The program will be administered by a Director, assisted by a staff of senior advisors. Reflective of the VITA approach to the energy issue, advisors will bring to the program much more than a knowledge of energy technology for energy's sake; they will bring a grasp of diffusion constraints -- what they are and why -- and knowledge of alternative energy technologies as they relate to the important needs areas. For example:

- Agriculture and Forestry (Agricultural systems, tools, irrigation, land reclamation, and renewable fuels)
- Food (Processing, preservation, and storage)
- Environmental Health (Water, sanitation, prevention)

- Habitat (Housing, cooking, hot water, space heating, lighting)
- Enterprise Development (Crafts, cottage and village industries)
- Transportation and Communication (Land and water vehicles fuels, radio, educational systems)

Two other significant areas -- impacting on and impacted by activities in these other sectors -- are management and environment. The Energy Program places due importance on supporting the management capability of implementing organizations. Likewise the program staff must reflect ability to analyze the environmental consequences that alternative energy technologies, or their lack, have on eco-systems.

Because of 1) VITA's unique outreach to the broader worldwide technical community, 2) the existence of mechanisms for bringing this expertise to bear on problems, and 3) the availability of core VITA staff, familiar with use of these resources, the Energy Program gearing up and administrative costs can be kept to a minimum. The Program staff will be headquartered in Maryland but will receive additional program delivery support from centrally located field representatives, who will be phased in during the course of the project.

More on the nature of the administrative structure, (for example the relationship of this structure to the grant-making process) and on the suggested staffing is provided in subsequent sections. This explanation, however, should enable the reader to see the Energy Program as it relates to existing VITA mechanisms and as an appropriate structure for accomplishing program objectives.

SERVICE DELIVERY MECHANISMS

The VITA Energy Program has three major service delivery components. The program, with one component operational already and the framework in place for startup of the other two, will have the capability to impact directly and quickly upon the constraints that now tend to work against the effective use of alternative energy technologies.

The program's delivery components are designed to expand during the course of the program and to gain strength from each other as they do so. The first component, Technology Transfer Services, encompasses VITA's existing technology transfer mechanisms and services -- consultants, volunteer involvement, documentation center, publications development and distribution, and training programs, educational activities. All of these are supported by major on-going promotional, communications channels which are available immediately and will be vital to the success of this effort.

The second component is the development of an International Alternative Energy Information Network. Through daily operation of its technology transfer services, VITA is in contact with the extension agents, key local organizations, technical experts, large and small-scale businesses, universities, and public and private programs actively involved and interested in the alternative energy field. Through these mechanisms, VITA knows who is doing what and where. Through this component of the proposed program, VITA will expand its capability to pool and use information gained from these contacts and interactions effectively -- 1) to make information available, easily and quickly, to project designers, implementers, potential funders; 2) to identify and support initiatives within developing areas which may require involvement of the other two program components; 3) to use VITA's technology transfer services to promote the ability of information centers to disseminate information (and other skills) between and among developing countries.

The third program delivery component of the Energy Program is a VITA Small Grants capability. Through this program component, VITA will make grants available on a selective basis to organizations working on activities related to diffusion of alternative energy technologies. This component of the program, by working through the technology transfer and network components, will be able to reach directly to those involved in efforts worthy of support.

OUTREACH

In order to assure the fastest possible start-up of the effort, VITA will mount a campaign to promote the new program and make its mechanisms and services available. Through the VITA News, VITA will reach an audience (circulation above 15,000 per issue) which includes a broad cross-section of the organizations and individuals working in development, appropriate technology and alternative energy in both the developing and developed world.

In addition, VITA will print a special announcement/press release to go directly to the large number of international agencies, (OXFAM, UNDP, FAO), private and voluntary organizations, funders, implementers, domestic groups with whom VITA interacts regularly. A special circular will be prepared to inform AID missions of the effort; a second specialized circular will be prepared and sent to each field office of the Peace Corps, and to the other major volunteer-providing groups, such as United Nations Volunteers, International Voluntary Services, Inc (USA), Volunteers in Service Overseas (Britain), CUSO (Canadian), etc.

Each of these outreach materials will contain sufficient guidelines and information on the Program so that readers will be encouraged to touch base immediately. Once contact is made -- and VITA is aware of the effort, the need, the problem -- other mechanisms are ready to take over. And, as pointed out earlier, once the Energy Program is well underway, all delivery components -- Technology Transfer Services, International Energy Information Network and VITA Grant Programs -- will interact and support each other effectively and efficiently.

TRANSLATIONS

Many of VITA's energy-related manuals are published in French and/or Spanish as well as in English. Another, in preparation, includes an edition in Arabic. Based upon this core, VITA will use the services of its core staff, cooperating Third World institutions and an existing pool of some 400 volunteer and paid translators, to translate appropriate written materials developed by the Energy Program into Spanish, French, Arabic, or other significant Third World languages whenever necessary to facilitate the outreach and effectiveness of these materials. In addition, there are some 800 Volunteer experts having native or near-native fluency in such languages included in VITA's Volunteer roster. Others are being recruited. These Volunteers greatly enhance the ability of all Energy Program components to operate in languages other than English.

REPORTING AND EVALUATION

With that overview as background, the following sections discuss in some detail each of the service delivery mechanisms. Each of these major program components has a set of objectives and performance indicators which emanate from the overall project objectives listed previously. Objectives and indicators are stated clearly for each component; they therefore serve as guidelines for action and record-keeping, and finally as criteria upon which to base progress and evaluate the effort at various stages of implementation.

A separate section of this proposal contains a full record of objectives and indicators which have been established for the Energy Program. The separate evaluations of the three major program components will form the basis for the tracking and evaluation of the overall effort. The approach shown in this proposal is reflective of VITA's belief that successful recordkeeping, replanning and evaluation all have their roots in the planning process. This approach is the one which will be transferred to those institutions with which VITA interacts on a grant basis.

IV. SERVICE DELIVERY COMPONENT I: TECHNOLOGY TRANSFER SERVICES

All of the mechanisms described as part of VITA's Technology Transfer Services derive from three powerful VITA resources:

- The collective expertise of more than 4,500 technical experts and development specialists who contribute their time and professional skill to VITA as Volunteer consultants. Approximately 500 of these VITA Volunteer experts have their primary skills in the field of energy; another 500 have strong energy background in energy applications as a supplement to another primary field (e.g. architecture, agronomy, rural industries).
- A technical information collection which consists of over 50,000 documents dealing mainly with small-scale technologies. Approximately 1/10 of this collection is directly concerned with the problems of generating and using low-cost energy; much more is relevant. Also part of this resource is a unique system for classifying, storing and retrieving technical information.
- An existing informal but powerful network of VITA collaborators, friends, former users of VITA's services, etc.

The following paragraphs describe each of the Technology Transfer Services in terms of 1) its existing structure and 2) the initiatives to be undertaken in the area as part of the VITA Energy Program. Objectives for each component, as well as the indicators or benchmarks which VITA expects to achieve while working to meet the stated objectives, are to be found in Section VI of this Proposal.

ENERGY DOCUMENTATION CENTER

Background. The number of implementing organizations located within developing countries has risen dramatically within the past couple of years. The emergence of these exciting and dynamic groups has exacerbated the information flow problem; the inability of researchers and practitioners to obtain adequate documentation about existing technologies has become an even greater bottleneck to effective diffusion of alternative energy technologies -- even as the potential to get more things done in the field has increased! At a recent meeting of international appropriate technology practitioners, the message from developing country representatives was loud and clear: "We need up-to-date information fast. And we want only the best and most relevant."

VITA's Documentation Center is an ongoing mechanism which collects and disseminates information on low-cost energy technologies. This Center has

acquired, classified, and stored over 50,000 individual pieces of documentation on over 880 technical fields. Each year the Documentation Center sends out some 20,000 documents in response to nearly 2,500 requests from AID Missions, Peace Corps Volunteers, missionaries, small business, government agencies, development workers and others around the world. Over one-quarter of these requests are directly concerned with energy problems.

Energy Program Initiatives. Building upon this proven mechanism, the VITA Energy Program will enable VITA's Documentation Center to greatly expand its energy holdings, to cut the time needed for processing a request for information in half and to reach potential users far more easily and on a much-expanded basis.

VITA will increase systematically its technical information holdings through an aggressive and expanded acquisitions program. Much of this documentation will have been developed by Third World public and private agencies. This material -- so often unpublished, or printed in limited quantities -- is precisely the type of information seldom available through conventional libraries, information centers, or bookstores. At the same time, it is the type of grassroots-oriented, nuts and bolts information that is usually most immediately helpful to alternative energy practitioners.

If such information is to be of maximum value to planners, researchers, and practitioners, it must be responsive to the need and contain comprehensive data. As part of its documentation efforts, VITA will involve Volunteer technical experts, with field experience in the relevant areas, in reviewing the holdings to recommend categories under which the material should be made available, to make judgments as to technical feasibility and to determine usage parameters (small-scale and low cost, highly technical but good background information) and so on.

Timing is an important factor: information must be received as soon as possible. Therefore, in order to insure that appropriate information is readily available in response to requests, VITA will, during the first year of the Program, expand its manual system capability and, at the same time, prepare all its information for input to the computer. By the beginning of the second year VITA will have developed and acquired a computerized system to classify, store, and retrieve all energy documentation and program or project information. Such a system is necessary to enable VITA to deal with a much expanded information flow, to reduce staff requirements, to shorten response turn-around time (from its present six weeks to two weeks) and to enable VITA to tap into other computerized energy data bases (e.g. Department of Energy, Library of Congress, INFOTECH, etc.). Since these other data bases typically contain information on higher level technology, a computer interface will allow VITA to concentrate its holdings on the type of low-cost, renewable energy sources so urgently needed in rural areas of the Third World while at the same time retaining access to material on all levels of technology.

The other important aspect of the computerization is that it will serve not only the Documentation Service mechanism, but as its capability is realized, all three program delivery components.

In addition to technical information on the full range of low-cost energy sources, organizations, and projects appropriate to rural Third World conditions, the Energy Documentation Center will be able to provide, on demand, such information as: selected bibliographies, lists of manufacturers of energy hardware, lists of research and field projects in the energy sector, plans for the construction and testing of energy devices, etc. For energy staff and consultants, for AID/Washington program people, for program developers from US-based private and voluntary organizations, access to VITA's Energy Documentation base, once on a computerized system, need be no further away than a phone call!

TECHNICAL RESOURCE PROGRAM

Background. This program includes VITA's by-mail consulting services, and a variety of special efforts undertaken to pool and channel the expertise of VITA Volunteer experts so that it can be used most effectively to impact on problems and efforts which are far removed.

This category involves VITA's entire roster of energy-related Volunteers, all of whom are available to respond to requests for technical assistance. Through this mechanism, requesting organizations can directly tap into the experience and insight of Volunteers having (collectively) over 6000 person/years professional experience in the energy field, including over 1000 person/years field experience in LDCs. For example, in 1978 VITA responded to some 200 energy-related requests for the by-mail assistance of VITA technical experts.

Among the types of questions that can be at least partially, and often fully, answered via by-mail consulting are those related to solving technical problems; designing appropriate equipment and structures; determining equipment and materials needs; detailing plant layout and facilities requirements; modifying existing technical designs; testing and laboratory analysis; defining project design, needs assessment guidelines and evaluation; and so on.

Energy Program Initiatives. As part of this program VITA will initiate a drive to identify and involve additional Volunteers in the energy areas. This effort will have the effect of increasing local organization access to sensitive technical expertise and of improving VITA's capability to respond quickly.

In order to backstop this technical assistance capability to meet the larger demand, to enable handling of questions which require more time and expertise than is now available, VITA will expand its Volunteer involvement and technical expert convening capability to include:

- Formation of standing panels and working groups in key technical areas to research critical energy problems and recommend solutions to review technical materials prepared by VITA, and so on. VITA has assembled groups of highly skilled experts in the fields of wind power, wood fuel and solar energy from which working panels have already been convened to discuss and recommend on such issues as constraints to technology transfer, technical feasibility of windmills for developing areas and so on. Results of such meetings are then made available to the entire Energy Program in a number of ways. Such panels could also be contacted by mail to review proposals and technologies, to recommend on technical feasibility of a proposed technology or project, etc.
- Promotion of closer ties between university-based research and development programs (both in developed and developing countries) and the mechanisms for diffusing alternative energy technologies. This can be done by conferences and meetings, and by actively seeking collaborative program opportunities.
- Construction and adaptation of prototypes to test existing technology -- before it is exported and before host country agencies, private voluntary agencies and others invest scarce resources in totally untried technologies.
- Formation of multidisciplinary advisory panels of experts to track the progress of, keep in touch with, and guide the evaluation of significant energy projects funded by VITA. This helps to insure that projects, and particularly VITA staff, have access to expertise that is fully aware of the project -- its demands and constraints -- so that advice offered (by long distance or in the field) is sound. All panels will be structured to reach out into universities, government agencies, private business, private and voluntary organizations, individuals in order to insure that the best expertise is made available.

A final technical assistance service which will be expanded is the provision of qualified experts available for short-term consulting assignments. This specialized service gives access to VITA's talent pool of experts to developing country organizations and American private and voluntary organizations, for example, which although having the ability to pay, are unable to locate quickly and easily qualified individuals for important short-term assignments.

ON-SITE CONSULTANT SERVICES

Background. At times, only the first-hand presence of an expert in the field can provide the required assistance. This is especially true in the areas of needs and resource assessments, project planning and project evaluation.

Most critical are those instances where a development project falls short of achieving its goals for a lack of timely assistance. VITA has occasionally sent consultants to provide on-site assistance, and their timely presence has been significant. A recent example is a feasibility study in Mauritania where a VITA Volunteer Consultant assessed the potential of alternative energy technologies for an AID-sponsored rural development project. While in Mauritania, the consultant designed a solar still for distillation of sea water using locally available materials. He also identified designs of solar water heaters which could be introduced through the refurbishing of AID housing and suggested different applications of wind, methane, and animal power. By going to Mauritania at the initiation of this project, VITA's consultant was able to assist AID in incorporating an alternative energy strategy into the project design.

Energy Program Initiatives. As part of the Energy Program, VITA will significantly expand its capability to provide on-site consultants in two ways:

1. Through the expansion of its Technical Resource Program, described above, VITA will increase the availability of VITA Volunteers highly skilled in the technical fields required.
2. VITA will expand its staff expertise in the end-use disciplines for which technologies are designed. These would include but not be limited to agriculture, housing, transportation and communication.

The general purpose of this expansion will be to enhance VITA's ability to assist AID Missions, host country institutions, expatriate PVOs, etc. to develop and disseminate technologies which answer felt needs and also to identify and apply the resources necessary to meet those needs at the end use point in practical and culturally acceptable ways. In addition, the evaluation of technologies as useful tools in the real world of the village, rather than the laboratory, will be possible.

Consultants will be available to assist with:

- Assessing local energy needs and assisting in problem definition.
- Identifying local renewable energy resources.
- Improving the energy efficiency of local tasks and advising on energy conservation.
- Designing, adapting, and testing alternative energy technologies.
- Planning and design of energy-related projects -- including, but not limited to, sub-projects to be funded under this project.
- Promoting and demonstrating the feasibility of alternative energy technologies.
- Evaluating alternative energy applications and reporting on findings for further dissemination.
- Inspecting and evaluating of sub-projects funded under this program.
- Establishing within local organizations management structures which are able to guide and support the transfer/diffusion process.
- Recommending avenues for diffusion based on surveys of the area.

In addition, VITA Volunteer and staff experts may be called upon by VITA to visit and research alternative energy technology efforts around the world. For example, India, South Korea and other Asian countries have pioneered rural methane applications. Brazil is producing ethanol fuel from sugar cane wastes and manioc. There is much Volunteers can learn from these groups and make available to VITA so that VITA can facilitate the transfer of the technology. When at all possible, VITA will seek to have such consultancies undertaken by VITA experts who are themselves residents of that or a nearby country, or, by nationals or former nationals of the country now residing in the U.S.

VITA's ability to tap skilled, sensitive experts to provide this short-term, on-site assistance is an important part of the Energy Program.

EDUCATION AND TRAINING

Background. At present VITA provides a number of education and training services. The most noteworthy of the education efforts is contained within the publications program, which places priority on producing and publishing manuscripts which 1) make technology understandable by, and therefore available to, the widest possible audience, 2) can be used easily by development workers to train and educate program participants, 3) seek to inform readers of sound approaches to transfer by placing technology in perspective with the other related factors.

In addition, VITA has in the past year or so undertaken a number of successful, highly rewarding training efforts. In one instance, VITA conducted a three-week Information Resources/Technical Assistance training seminar for representatives of four key Central American organizations. In another training effort, VITA provided a three-month training program in appropriate technology and information systems for the documentalists of an institution in Upper Volta.

In still another education/training assistance effort, VITA has prepared packets of training materials for use by Peace Corps Volunteers. One training packet is related specifically to alternative energy technologies.

Energy Program Initiatives. In keeping with the education and training possibilities which will be enabled by the Energy Program, VITA will use and expand its publications and training mechanism to:

Develop a series of technical manuals, technology-specific bulletins, and resource directories based on activities undertaken by the Energy Program in order to insure use of the material as tools for education on the technology transfer process. The first of these special activities will be preparation of an international directory of energy resources; it will contain listings of organizations active in the field, key research projects, locations of on-going demonstration activities, etc. This unique directory will bring together, in a single source, alternative

energy activities in both developed and developing countries and will promote, therefore, the effective exchange of ideas, information, experiences among practitioners, both northern and southern.

A second directory, a compendium of sources of commercially produced energy components and systems, will include data on equipment and materials available from small enterprises in LDCs. Such a directory will benefit both the purchasers of such equipment and materials by giving them leads to local and often lower cost sources but will benefit the small businesses themselves by giving them a convenient way to publicize their products to an audience many times larger than at present.

- Investigate the potential for expanded use of audio-visual materials to facilitate the technology transfer and diffusion process. Low-cost films, filmstrips, video-cassettes and tape recorders are being used with some success in certain programs. Findings of such efforts will be examined and recommendations made for 1) expanded VITA involvement in the audio-visual, non-formal education field and 2) funding efforts, through the Small Grants Component, of programs undertaken by others. Special emphasis will be placed on working with groups such as World Education, World Neighbors, the Development Communication Clearinghouse, and the NFE Information Center at Michigan State.
- Seek to expand training capability. For example, one VITA seminar might be held to introduce host-country technical people, who have received traditional training, to the state of the art in appropriate energy technology. Such a short-term introduction can be accomplished on-site or at VITA.
- Maintain the flexibility needed to design training programs to fit the needs of collaborating institutions. Training, therefore, may consist of an introduction to project planning, use of systems for classifying, receiving and storing appropriate technology information, or of an in-depth study of a particular technology.
- Arrange conferences, workshops, seminars to bring together key organizations working on energy-related problems, either on a national or international level. Such meetings could be held in either the U.S.A. or in developing countries. VITA Energy Program staff, advisors, and consultants would be available to assist in the organization and administration of such meetings and/or as participants. Papers resulting from such meetings would then be published and distributed worldwide by VITA's Publications Division. In addition to English, such reports and papers would be issued in Spanish, French, Arabic and (as appropriate)

major Third World languages. Such meetings could be arranged at the request of AID/Washington or individual AID Missions and could be either funded out of monies ear-marked for small grants or by funds external to this project (e.g. under separate grants or contracts).

COMMUNICATIONS

Background. VITA now maintains an array of communications channels through which it informs others of its activities, keeps in touch with the efforts of a worldwide network and disseminates the technical materials produced by a wide network. Most importantly, VITA seeks to communicate the results of its program activities and the perspective engendered by its unique combining of appropriate technology philosophy and concepts and the capabilities made possible by a Volunteer resource base consisting of talented motivated professionals. The best-known communications efforts are VITA's newsletters -- one for the larger development audience and one for VITA Volunteers -- and its publications activities.

Energy Program Initiatives

In order to inform the widest possible audience of activities being undertaken by the Energy Program and to involve that audience on an on-going basis, VITA will expand its present communications activities and undertake several additional efforts. The expanded communications effort will have the following components:

VITA NEWS: One issue of VITA News per year will be largely devoted to energy sources, in general, and to the work being done by VITA's Energy Program in particular. Each energy issue will focus on such areas as state of the art for low-cost energy technologies, energy applications, available resources, on-going activities, etc.

ENERGY MAILING LIST: This is a specialized mechanism to reach the smaller sub-audience that is most intensely concerned with energy sources and utilization. VITA has developed an initial mailing list of some 300 organizations specializing to a high degree in energy. In addition, AID/Washington and individual AID Missions are invited to suggest their own contacts for inclusion on this mailing list. The activities of the expanded information network later in the Energy Program will also make possible a sizeable addition to this list. The Energy Mailing List will be structured to include, among others:

- AID Missions.
- Peace Corps Country Offices.
- Headquarters and field offices of all PVOs belonging to consortia such as Private Agencies Collaborating Together and Church World Service.
- Host country government ministries concerned with energy:

agriculture, rural development, education, commerce and industry, natural resources, social welfare, and rural extension.

- Major universities, research institutes, and similar institutions located in developing and developed countries.
- Country and regional offices of international organizations such as FAO, UNDP, UNEP, UNICEF, WHO, ILO.
- Regional, national and local energy centers interested in and involved in facilitating development and dissemination of alternative energy technologies.

ENERGY BULLETIN: A series of Energy Bulletins will be published by the Energy Program six times a year. These bulletins will be devoted to alternative energy sources, available resources, project up-dates, case studies, research notes. While each issue will include material on the full range of energy activities, a significant portion of each will be devoted to a primary theme known to be of special interest to the development community.

The final format and selection of issue themes will be worked out as the program progresses and events and projects become clearer. However, the following are themes which might be covered:

<u>ISSUE #</u>	<u>MONTH #</u>	<u>THEME</u>
1	2	Announcement of VITA Energy Program and Listing of Energy Resources (organizations, publications, etc.)
2	4	Energy for Farming: Cultivation, Harvesting, Crop Drying and Processing, Transport. (Technologies, Projects, Bibliographies, Research Activities, etc.)
3	6	Guidelines, Format, and Selection Criteria for proposals to be submitted for funding under the small grants section of the Energy Program.
4	8	Solar Energy (in general).
5	10	A discussion of the constraints on the diffusion of methane or bio-mass technology.
6	12	Water Power (in general).

Subsequent issues would address such specialized concerns as Rural Electrification, On-Farm Energy for Agriculture, Water Pumping, Development of Small Energy-related Enterprises, Project Planning, etc. Each issue would be 6 to 10 pages in length.

ENERGY FACT SHEETS: The Energy Program will publish Energy Fact Sheets (12 per year), each pertaining to a specific application of low-cost energy. Such sheets will contain, in capsule form, basic data, resource parameters, specifications, and suggested applications for each technology featured. Each Fact Sheet will also direct the reader to resource groups which can provide technical information, technical assistance, or financial aid for specific research or implementation of each application.

Fact Sheets will include brief questionnaires in which interested development workers can list details regarding their exact needs, available resources, local conditions, etc. These questionnaires can then be used as the basis for requests for further assistance or information from VITA and will insure that VITA receives sufficient data on which to base appropriate responses. Both Fact Sheets and Questionnaires will be in English, French, Spanish, and as appropriate, Arabic. They will serve as a valuable tool in assisting development workers in making preliminary needs assessments and resource surveys.

STAFF VISITS: Individual members of the Program Staff, as they travel in developing areas, will provide the opportunity to promote the concept of low-cost energy sources and the services of the Energy Program. Project staff will visit AID Missions, host country organizations, field projects, etc. Field representatives, as they are brought in will be in very close touch as well.

In addition, consultants traveling overseas under the Technical Transfer component of this project and staff members of other organizations that typically collaborate closely with VITA (e.g. PACT, A.T. International, Intermediate Technology Development Group, etc.) will be available to promote services in the course of their work in developing countries. Such assistance with promotion is already a commonplace occurrence.

IV. SERVICE DELIVERY COMPONENT 2: INTERNATIONAL ALTERNATIVE ENERGY NETWORK

Background: A primary focus of the Energy Program is the establishment of an international network of organizations and key individuals working in the development and dissemination of low-cost technologies based on renewable sources of energy. Such an information network would serve to break the isolation faced by many of those working in the field and would be a primary mechanism to facilitate the transfer and diffusion of such technologies.

The Alternative Energy Network envisioned by VITA will include all those working to solve rural energy problems: the Peace Corps Volunteers working on a village electrification project in Cameroon, the county extension agent working with wind-generators in Iowa, the design team working on an improved storage battery in the Netherlands. It will unite the rural development planner in Thailand, the Missionary building a methane digester for a secondary school in Peru, the local outreach group working to disseminate improved wood stoves in Guatemala. It will bring together the AID Mission, the rural small business, the European volunteer, the American PVO.

Energy Program Initiatives: The Alternative Energy Network is an extremely important part of the proposed program. Among other things it will enable:

1. The establishment of a global energy information network to provide local institutions in LDCs with access to current activities in the area of alternative and renewable energy programs and projects.
2. The promotion, strengthening and development of the information and alternative energy resource and development capabilities of local institutions in developing countries.
3. Access to institutions most directly involved in the transfer and diffusion of energy technology "appropriate" to local needs. This information system, interfaced with VITA's computerized Documentation Center and Volunteer list, will provide a focal point for the collection of energy information from all those working with such technologies everywhere in the world. In addition, the system serves as an important resource to the grant mechanism by providing ongoing outreach to worthwhile field efforts.

With access to such program information, and by using it wisely, people working on alternative energy activities can save countless hours and dollars by building on work done previously, by avoiding past mistakes, by taking advantage of promising directions uncovered by others.

The type of information exchange made possible by such a network can be invaluable. Even under a much slower information system than the one possible under the Energy Program, VITA was able to offer the following:

- Data on 16 West African wind energy projects to the Peace Corps Volunteer interested in starting up such a project in Ghana. The PCV is now corresponding with several of the most promising
- Contact with designers and researchers in the US, India, Mali, Brazil, Mexico, France, Israel, Niger, Pakistan, Senegal, Thailand, for a Canadian engineer in Botswana who requested data on current research in the area of solar pumps.
- A contact in Peru to advise a village hydro-electric project in Papua New Guinea which had been frustrated in efforts to develop a low-cost device to govern the speed of the turbine. Through the subsequent exchange, the project was able to skip six months of trial and error testing.

VITA's on-going contact with hundreds of alternative energy projects has repeatedly demonstrated how parallel activities can benefit from the exchange of information and ideas. But experience shows also that, given the isolation of many individual projects, people frequently do not know about similar activities that have been or are being done. At present, there is no central mechanism to provide this vital information. Through its own extensive energy contacts, VITA currently is able to play a small but significant role in bridging this information gap, but, as in the case of technical documentation, the demand is for a much greater access to such resources.

In order to set up this network and to process information quickly, VITA will strengthen its current capability to access program information by computerizing data on most of the estimated 10,000 organizations involved in rural energy around the world.

Using the computerized capability, VITA's files, feedback on field projects as provided by AID Mission and Peace Corps Country offices, VITA's Energy Program will develop profiles of on-going energy-related work in any geographic area and/or in any particular sub-field of alternative energy technology. VITA also will develop, based upon information put into the computer from thousands of projects, models for the successful transfer and diffusion of low-cost energy technologies. Such profiles and conceptual models, which will be of immense value to planners and project designers, make the information gained from these projects available to a global audience.

Working through already existing collaborative relationships with domestic USA energy networks (e.g. Alternative Sources of Energy, New Alchemy Institutes, Windpower Digest, SERI, NCAT), the VITA Energy Program will be able to reach tens of thousands of alternative energy researchers and practitioners, thus tapping their expertise and resources for meeting Third World needs. Similar interaction with European networks (e.g. ITDG, the TOOL consortium, various German, Swedish, and French groups) will give the program

a similar outreach in Britain and the Continent, bringing more thousands of alternative energy experts into regular contact with their American and Third World counterparts.

Such an interfacing of small-scale energy activities has not yet been undertaken on a comprehensive scale. VITA is in a good position to begin this global network: VITA is already in contact with most of these organizations and individuals through VITA News, through its Documentation and Technical Advisory Services, and through its on-going program. Most organizations and individuals involved in appropriate technology and alternate energy come to VITA at some point. The Energy Program will give VITA the resources needed to consolidate and expand this extensive, but currently informal, interchange through a series of structured and routine mechanisms.

Such outreach mechanisms will include VITA's on-going international collaboration with Socially Appropriate Technology Information System (SATIS). SATIS is presently comprised of 25 organizations in developed and less developed countries working together to establish international technical information exchange. Another mechanism would include an expanded VITA program to transfer "core" collections of VITA's energy information. These collections are needed by developing country institutions to provide a resource base for their own technical consultants and to help develop the energy information resources sorely lacking in these countries.

At present, a number of highly competent indigenous organizations are working in the alternative energy fields. Examples include the Renewable Energy Resources Information Center (RERIC) in Thailand, the Arusha Appropriate Technology Project (AATP) in Tanzania, the Tata Energy Research Institute in India, the Meso-American Center for Studies on Appropriate Technology (CEMAT) in Guatemala, Corporacion de Investigaciones y Desarrollo Regional (CIDERE) in Chile, Instituto de Investigaciones Electricas (IIE) in Mexico and the Universidad Nacional de Salta in Argentina.

Many of these diverse organizations currently have considerable capability to serve as active national or regional partners in a global alternative energy network; others need various levels of assistance to attain such capabilities. Therefore, an important function of the Energy Program will be to assist appropriate indigenous organizations develop the capability to serve as regional energy technology transfer and diffusion centers, each having their own energy data bases and their own outreach capabilities. One avenue for doing this is through training of local institution staff, for example, in VITA's own A.T. Information System. This model has been adapted to interface with local institutional needs in Upper Volta, Botswana, Papua New Guinea, Guatemala and Honduras.

VITA's system is flexible so that it meets local institutional needs. For it is impossible to predict the exact form each local or regional center will take. Indeed, it would be a mistake for the VITA Energy Program (or any other "outsider") to attempt to dictate the structure or functions that should evolve to meet regional needs or aspirations. Some such centers might, for example, include an extensive R&D component with supportive workshops, testing facilities, etc. Others might focus on training; still others on small business development. Such structures and functions must evolve in response to needs, and not as solutions in search of problems.

Energy Program personnel, through extensive travel during the first year, will identify existing organizations that have the potential and interest to take on information exchange functions and will help them define specific needs and develop programs to acquire the capability, including acquisition of information, establishing contacts, training of personnel, development of information handling systems, etc. The resources needed by such organizations to expand their capabilities to meet regional needs will be provided through the small grants component described in a subsequent section.

The selection and enhancement of each center will be conditional on a range of factors including current and past administrative/managerial competence, support for the operations within a framework informed by the principles and practices of A.T., current and potential access to external funding (both national and international), level of existing capability, the specific type and level of assistance sought, regional needs, etc.

By assisting in the development of local structures having the capability to carry out development/dissemination efforts on their own -- and therefore able to leverage the resources needed to sustain operations -- the Energy Program will build a viable, dynamic network that will not simply collapse when discrete funding for VITA's role in its creation ends.

Moreover the success of this network is critically important to the success of efforts to overcome constraints on diffusion, for these local organizations and centers serve as important outreach arms to insure that VITA's grant-making program is reaching grass-roots efforts and those organizations where VITA's assistance could lead to the most positive impact on the successful diffusion of technology and the lives of poor people.

IV SERVICE DELIVERY COMPONENT: 3 VITA SMALL GRANTS PROGRAM

Background: Widespread development and dissemination of appropriate energy technologies in the developing world is often inhibited by the lack of financial resources which can be devoted to given efforts. LDC government agencies, small businesses, and PVO's operating in the energy sector are frequently unable to muster the necessary funds. This is true also of ad hoc groups that have pioneered many of the most noteworthy alternative energy efforts in the developing world. In many instances all of these groups may find that funding is all but impossible to obtain through conventional mechanisms: the amounts required may be too small for some funders to be able to handle; larger amounts may be for projects so specialized that they fall outside the criteria of traditional sources.

In an effort to alleviate this "resource bottleneck" and allow well-planned, viable field projects to overcome this particular constraint on technology transfer, the Energy Program will make available small grants and other forms of financial assistance, on a selective basis, to organizations working to promote the development, transfer and diffusion of energy-related activities in rural areas of developing countries.

The VITA Small Grants component, like the other two service delivery components is based solidly on VITA's proven outreach capability. Moreover, it complements the others well. For example, by providing financial resources, VITA helps insure the generation of "state-of-the-art" information and experiences which enlarge the base of information upon which the other two transfer mechanisms draw.

Energy Program Initiatives: VITA's Grants program will be available to the broadest audience possible and to a wide range of energy efforts, including "hardware" and "software" projects (planning, training). All efforts funded, however, must meet a set of established criteria. Because VITA recognizes that financial assistance can be necessary at a variety of different points in the development of a given effort, VITA's program will be flexible, yet well planned, so that VITA's assistance can be given at points along the project continuum--from inception through completion--where the funds will do most toward overcoming transfer and diffusion constraints.

The following paragraphs sketch the methodology to be used in finalizing eligibility requirements, selection criteria, grant application, approval and evaluation processes. These will be refined and delineated by VITA soon after project startup.

Recipients: Those eligible for grants under this Program include but are not limited to:

- LDC public and private agencies: government agencies, indigenous organizations, universities, schools, research

institutes, indigenous small businesses, cooperatives

- USAID/Peace Corps personnel when they represent indigenous clients
- US private voluntary organizations, church-affiliated organizations, other US development groups
- international development organizations
- consortia of development agencies

Types of Grants: The overall objectives of this energy program, which were noted earlier, form the basis for the types of activities for which grants will be made. Typical activities might include the following projects:

1. Alternative Energy Demonstrations--projects designed to demonstrate the utility, effectiveness, low operating cost, and reliability of proven energy technologies in realistic rural settings, where the intended audience is sufficiently broad.
2. Practical Applications of Alternative Energy Technologies--projects having the objective of introducing a proven alternative energy technology to perform specific task(s) as part of an on-going or planned activity. Such projects might include such activities as the electrification of a rural hospital using wind energy or the installation of a water-powered grain mill to allow for local processing of crops grown in the area.
3. Investigations of Small Business Potential--production of energy components, technologies, or systems by small commercial enterprises, including profit-making firms, cooperatives, and non-profit productive units. Alternative energy technologies--to become widespread in LDCs --will need to become widely available to large numbers of people at a reasonable price. Local production, or at least local fabrication, may often be the most appropriate means to carry out such dissemination. Small businesses, however, are typically handicapped in their efforts to produce energy-related products (e.g. windmills or pre-fabricated methane digesters) not only by a lack of technical information on such technologies but also because they lack the necessary resources (including human) to conduct market surveys, to refine production processes and product design, and to purchase the necessary capital equipment. The example of the Ujuzi Leo Industries Cooperative in Tanzania, which is now producing and selling locally the VITA-designed Arusha Windmill is a classic example of how a relatively small amount of funding (in this instance under \$12,000) can lead to the creation of a viable, self-sustaining local enterprise that directly supplies an urgently needed (and accepted) energy technology.

4. Training/Personnel Development Activities--efforts providing training on low-cost, renewable energy technologies and the possibilities for transfer and diffusion to rural extension agents who in turn will disseminate their newly acquired expertise in rural villages.
5. Capacity Building--efforts directed toward strengthening the capabilities of LDC organizations to operate in the alternative energy field. This includes assisting the establishment of alternative energy information centers within indigenous development agencies, or assisting such agencies in developing methodologies to identify local needs and conduct energy resource assessments, or criteria to identify, select, design, and implement their own energy projects.
6. Planning Assistance--projects designed to assist in the identification and design of alternative energy programs, especially in instances where development of otherwise promising projects is endangered by inadequate needs and resource assessment, poor proposal preparation and/or a failure to consider the constraints in systems terms.
7. Research and Development--projects having an immediate practical application, and designed to relieve constraints on diffusion. Pure research activities will not be sponsored by the small grants component of the energy program. However, research activities which will have a direct impact on the rural sector may be funded. Examples of such activities might include assisting a university conduct a survey of local solar radiation levels if such a survey is needed before a solar crop drying project can be initiated, or design and testing of prototypes if dissemination is contingent on such testing.

In practice, many of the sub-projects funded under this program are likely to combine elements of two or more of the above types. Demonstration projects, for example, are more effective when they provide energy for current village activities in an actual village. Training programs are frequently more effective when they are "on-the-job" and hence may produce goods or services that can be sold locally to help support further training.

GRANT CRITERIA

Projects funded by the Energy Program must meet certain criteria. These criteria, or guidelines, will be established to 1) serve as a concise public statement of the priorities, emphasis and objectives of the Energy Program, 2) insure that all projects are being considered against a standard--and public--measure, 3) guide the preparation of an applicant's formal request for assistance and 4) provide a base against which the project can be evaluated at key points during implementation.

The final grant criteria will be drafted immediately upon receipt of the grant award, based on the objectives presented here. Draft criteria will then be shared with key AID officials, representatives of other grant-making organizations, such as PACT and CODEL, for their recommendations and input. Indeed, representatives of PACT have offered VITA the benefit of their experience and expertise, particularly during the crucial first months of gearing up.

Once the criteria have been set and agreed upon, they will serve as a basis upon which VITA makes awards and against which AID may wish to make reviews of the grant process at certain intervals. For the grant criteria are critical to the success of the Energy Program and its ability to be a force for relieving constraints that now prevent energy technology transfer and diffusion. Without the proper criteria, there is little to prevent the program from being just another "nice" effort.

Good criteria as developed and fine-tuned for the Grants Component, will also be used as a meterstick by which other activities in the Program are measured for appropriate action; for example, to help make decisions about which organizations should receive on-site consultants and which are the best candidates to receive a transfer of some of VITA's documentation and become regional information centers. It should be noted that criteria work both ways: they govern the grant recipient and the grant giver, and by so doing provide the best basis for joint undertakings.

Following here are some of the important characteristics which VITA feels must be reflected in the grant criteria once they are finalized. All flow from the Program objectives and from a clear focus on the commitment to the need to relieve constraints to technology diffusion in order to test the ability of alternative energy technologies to alleviate world energy problems.

- Projects must indicate that they have the support of a large section of a community (whether the "community" is a village, a nation, or a region) if interest is to be captured and sustained during the operational life of the project.
- Information, technologies, methodologies, ideas, or approaches being used as part of the project must have proven themselves in actual development situations, or there must be very clear

indication of the likelihood that they will do so. New, alternative ways of thinking and doing must have a reasonable likelihood of success. No planner would think of introducing into a village a pump that has not been tested outside of the laboratory. The pump must first be tested under conditions approximating the village environment in order that its performance, reliability, and operating costs can be realistically measured. This principle is now widely recognized when applied to "hardware", but it is equally valid that concepts, project models, and other "software" must similarly be tested, proven, and adapted or at least be highly likely before they can be suggested as an alternative to a particular rural development problem.

- Priority will be placed on projects revolving around technologies and methodologies which respond to widely recognized problems and show every indication of being widely diffusible and replicable;
- Projects will be looked for which promote job creation and meaningful work through design and introduction of labor-intensive equipment and approaches, especially those involving decentralized, small-scale production units;
- The project, or program emphasizes technologies (either hardware or software) that can be understood, operated, and maintained within the given community;
- The effort is contributing to self-reliance through maximizing the use of local resources, materials, and expertise and, where necessary, through the importation of foreign technologies which have proven appropriate;
- Technologies introduced can be afforded by the individuals, groups, or businesses for whom they are intended;
- The project design has taken into account all factors related to increased output and productivity before beginning anything;
- The project encourages community members to recognize, use, and expand their own abilities, knowledge, and skills through on-the-job training, special community development efforts;
- Project planning has involved directly the individuals who will actually be implementing and supporting field projects;
- The project seeks to initiate meaningful dialogue between development agencies, support groups, communities; and includes mechanisms to continue that dialogue once the activity is over;

- The project seems to be likely to result in the development of reports, conceptual models, papers, or other written materials which can, in turn, be distributed to other organizations and individuals, so as to share the knowledge or experience gained with the widest possible audience;
- The program should either include adequate managerial, administrative and accountability elements, or pinpoint the areas where such needs exist.

SUBMISSION GUIDELINES

In order to convey to potential grant recipients what key elements must be present (or somehow accounted for) when a grant application is made to VITA, a checklist or listing of guidelines such as those listed here will be developed to aid in the submission and in the selection of projects.

GRANT-MAKING MECHANISMS

Final grant-making mechanisms for the Energy Program will be prepared by VITA in consultation with AID and other grant-making organizations. It is likely that the mechanisms once set, however, will resemble the following:

Size Determination

While not wanting to put a price tag on the cost of any type of energy-related development projects, current thinking is that VITA grants will normally range from \$1,000 to \$100,000 with variable structures for selection, depending on size and nature of the project. Size of grant will be judged in terms of a realistic assessment of costs and scope of work.

Small Grant Processes

To force the same selection process for a project of \$5,000 and a project of \$50,000 is not particularly cost effective. For grants of up to \$5,000, (provided the project has been measured against specific funding criteria) field authorization by senior program staff is appropriate in some cases. More specific selection processes might be required in other cases even for those under \$5,000. However senior personnel must have flexibility to move on efforts that might otherwise be thwarted by a long delay in processing a request for small amounts of money.

Project Selection Committee

Grant applications above \$5,000 will tend to involve more elements and should be subject to a more formalized (although not hamstringing) process.

One mechanism quite common among grant-giving organizations, is the formation of a Project Review committee which, in conjunction with staff, reviews, discusses, and recommends the merits of projects which have been received for funding. For VITA, formation of project selection committees is a natural extension of the mechanism through which standing panels and working groups already are easily assembled. Panels in each energy technical area will be formed; other specialists invited to participate in a selection process will represent management, development, economics and appropriate technology. This multidisciplinary approach will lend a well-rounded perspective to the selection process.

Also invited to serve on particular committees at given times will be representatives of AID, other private and voluntary organizations, small business, and so on.

In keeping with VITA's emphasis on reducing administrative red tape and insuring that assistance is as timely as possible, VITA will maintain a capability to impanel a committee on relatively short notice--either by meeting or by phone and mail when getting together is not possible.

GRANT MANAGEMENT

Each grant will be managed by a member of the Energy Program's senior staff. Each Manager will be responsible for insuring that proper administrative oversight is maintained, for following progress of the funded activity and for insuring that upon conclusion, the experience gained through the project becomes permanently integrated with the other service delivery mechanisms.

Grant management will consist of insuring that requesting organizations supply mandatory reports and evaluations at agreed upon intervals. In addition, both Energy Program headquarters staff (who will spend a great deal of time in the field) and the field representatives (who will enter the program in later phases) will visit, on-site, all VITA-funded programs on an ongoing basis.

PROMOTION OF THE VITA GRANT PROGRAM

In order to insure that the Energy Program's resources are widely known among organizations or local groups working on activities potentially eligible for funding, Energy Program staff will rely on the mechanisms outlined earlier in the outreach section. Such mechanisms will insure that a significant cross-section of all those working to solve energy problems in LDCs will be aware of the potential for funding under the grants component.

Announcements of the existence of the program, and in some instances guidelines for making application, will be placed in the VITA News and in other newsletters having widespread circulation, particularly in LDCs. Field

staff, who will be hired under this program, will do general promotion and will actively seek appropriate organizations and encourage them to select and submit projects of the types envisioned in this section. Other grant-providing agencies (such as PACT and A.T. International) will assist in identifying potential applicants from among the numerous proposals routinely submitted to them. (Likewise, VITA will have the capacity to be funder brokers for those funding agencies where project funding requirements fall outside the scope of VITA's selection criteria.)

Implementation of the Grants Component is outlined in the following section.

V. IMPLEMENTATION AND STAFFING

VITA's Energy Program will be carried out over a five-year period; each year will be shown as an implementation phase.

Phase One (Year One) of this program is, in many ways, a blueprint for careful, planned growth. During the first phase, all of VITA's various responses and service components will be selectively geared up and prepared for full level of activity in phase 2 (Year Two). This first phase is extremely important; in many ways the success of the entire effort depends upon the mechanisms and components being meshed correctly. The following schedule will give a much clearer picture of the ways in which the various components of the program will interrelate as the program begins and continues. Phase I is presented in some detail; Phase II is included, though not in the same detail, to show more clearly where the impacts and benefits of Phase I will bear fruit.

The last three years are not detailed (although the Objectives and Indicators in Section VI show projections through the entire period) because VITA plans at the end of Phase I to undertake an evaluation and replanning exercise. This is an important step. It will allow both VITA and AID to examine the project's progress toward meeting objectives and to decide where changes should be made as Phase II begins. A detailed implementation schedule for Phase II will emerge from that process.

IMPLEMENTATION SCHEDULE - PHASE ONE (1ST YEAR)

MONTH 1

- Recruitment of Program Director begun.
- Computer software planning begun.
- Preparations for transferring retrieval system for Documentation Center data to computer begun.
- VITA internal structures streamlined and organized to accommodate new program and increased staff.
- Volunteer roster polled to determine candidates for energy panels, on-site consultancies.
- Plans for acquisitions program for Documentation Center developed.
- VITA's in-place technology transfer services maintained.

MONTH 2

- Recruitment of Program Director continues.
- Special circular announcing Energy Program services sent to AID Missions, Peace Corps Field Offices, PACT members, other key PVOs and key indigenous organizations.
- Acquisitions program in effect.
- Computer software planning continues; includes look at all systems to determine what should or should not be computerized.
- Energy information in Documentation Center begins to be put on cards for later input to computer.
- Manual information system streamlined; as cards become available they form a directory to VITA information as a step between present system and computerized access.
- Volunteer recruitment efforts begin.
- System set up to insure that ongoing technology transfer mechanisms are yielding information necessary to the formation of the Alternative Energy Information Network and to the location of projects having potential for funding under the Grants Program.

MONTH 3

- Program Director hired.
- Recruitment of Senior Advisors begins.
- Support staff for Technical Transfer Services recruited/hired.
- Training begins for new staff -- introduction to VITA's systems and resources.
- Grant procedures drafted and sent for review.
- Internal reporting and evaluation system established to track progress of Energy Program.
- Development of software and in-house preparation for computerized information system continued. Purge of files in preparation begun.

MONTH 4

- Senior Advisors (two) hired and training begins.
- Grant procedures and criteria refined and finalized.
- Project selection mechanisms finalized.
- Booklet describing Grant Program, including application procedures and selection criteria, published. Special distribution to AID Missions, Peace Corps Country Offices, PACT members.
- Subjects for first issues of Alternative Energy Technology Bulletin and Energy Fact Sheet #1 set and researched.
- Development of and transfer of information into shape for computer input continued.

MONTH 5

- First trips to selected LDCs by Senior Advisors begun.
- Staff review of first applications for grants begun.
- Efforts to identify locus of first Field Representative begun.
- Training of Technology Transfer Component staff completed. Capacity to respond to an increased number of requests for on-site consultants, documentation, and by-mail advisory backstopping is in place and operational, even as preparation for computerization continued.
- Requests for on-site consultants considered.
- Arrangements made for three technical advisory panels.
- Issue #1 of Alternative Energy Technology Bulletin is distributed.
- Publication of Energy Fact Sheet #1.
- Preparation for special energy issue of VITA NEWS begun.
- Preparation of VITA information for transfer from manual to computer set up continued.

MONTH 6

- Senior Advisors continue trips in selected LDCs.
- Identification of potential locus for Field Representatives continued.
- Senior Advisors (two additional) hired.
- Project Selection Committee convened as appropriate.
- Approval of first grants made.
- On-going response to requests for program information, technical documentation, and advisory services continued.
- Special energy issue of VITA NEWS published, mailed to 15,000+.
- First Technical Bulletin published.
- Energy Fact Sheet #2 published.
- Development of and transfer of information continued.
- Systems for dealing with increased number of acquisitions and much expanded paper flow in place.

MONTH 7

- Senior Advisors trips continued.
- Locus for first Field Representative selected. Recruiting of Field Representative begun.
- First Alternative Energy centers in developing areas located for potential collaboration.
- Outreach campaign planned to seek additional avenues for participation in diffusion activities by small business, university groups, and so on.
- Staff review of applications for Grants continued.
- First on-site consultancies take place.
- On-going response to requests for program information, technical documentation, and technical advisory backstopping continued.
- Translation of VITA's current energy-related manuals and technical bulletins begins.

- Issue #2 of Alternative Energy Technology Bulletin distributed.
- Energy Fact Sheet #2 published.
- Preparation for computerization continued. Work with software specifications to determine needed program.

MONTH 8

- Senior Advisors trips continued.
- Recruiting of first Field Representative continued.
- Staff review of applications for Grants continued.
- On-site consulting continued.
- First Technical Advisory Panel meeting (Wind).
- On-going response to requests for program information, technical documentation, and technical advisory backstopping continued.
- Second Technical Bulletin published.
- Energy Fact Sheet #4 published.
- Programs for computer prepared on basis of need, work flow and goals of program.

MONTH 9

- Project Selection Committee meeting.
- Additional Grants approved.
- On-site consulting continued.
- Field Representative (one) hired.
- On-going response to requests for program information, technical documentation and technical advisory backstopping continued.
- Energy bibliography published.
- Issue #3 of Alternative Energy Technology Bulletin distributed.
- Energy Fact Sheet #5 published.
- Computer programs finalized.

MONTH 10

- Field representative trained at VITA.
- Staff review of Grant applications continued.
- On-site consulting continued.
- Second Technical Panel meeting (Solar).
- On-going response to requests for program information, technical documentation, and technical advisory backstopping continued.
- Third Technical Bulletin published.
- Energy Fact Sheet #6 published.
- Computer hardware selected; staff introduction to the program and systems begun.

MONTH 11

- First Field Representative on-site.
- Staff review of grant applications.
- On-site consulting continued.
- On-going response to requests for program information, technical documentation, and technical advisory backstopping continued.
- Issue #4 of Alternative Energy Technology Bulletin distributed.
- Energy Fact Sheet #7 published.
- Staff introduction to computer completed; internal systems set up for computer; data readied for addition to computer file.

MONTH 12

- Assessment and replanning of Energy Program.
- Preparation of detailed Implementation Schedule for Phase II.
- Staff review of Grant applications continued.
- Project Selection Committee meeting.
- Additional Grants approved.
- On-site consulting continued.
- On-going response to requests for program information, technical documentation, and technical advisory backstopping continued through manual systems.
- Directory of Alternative Energy Resources and Suppliers published.
- Fourth Technical Bulletin published.
- Energy Fact Sheet #7 published.
- Computer hardware in place; input of entire system.

PHASE TWO (2ND YEAR)

MONTH 1

- Replanned and redesigned project; activities continued as appropriate.
- Full implementation of computerized Energy Documentation Center.
- Publication of first bibliographies based on the computerized system.

Staffing

Following are job description outlines for each of the main positions to be filled in the course of the proposed program. Because VITA is well-known, it receives many unsolicited job applications and maintains a file of such. This file, combined with access to a broad number of organizations and the extensive Volunteer network, insures that VITA will be able to staff up for this program quickly -- and well.

STAFFING

Energy Program Director

The Director, who reports directly to VITA's Executive Director,

- Directs all Energy Department activities
- Supervises Program Staff
- Controls expenditures and other inputs
- Evaluates overall program performance
- Prepares Quarterly and Year-End Reports
- Maintains primary contact with AID/Washington
- Liaison with host country government and private organizations

The Director will combine extensive management and overseas field experience with a solid background in Alternative Energy and Appropriate Technology.

Senior Technical Advisors

These advisors, in such fields as agriculture, food, environmental health, habitat, enterprise development, and transportation, will:

- Promote alternative energy concepts
- Manage short-term on-site consulting services
- Review Grant applications and make recommendations regarding feasibility, likely impact, etc.
- Manage and evaluate Grants
- Coordinate Technical Advisory Panels and Volunteer working groups
- Interface with field organizations

All will have extensive energy-related technical and overseas backgrounds, including experience in the design, management, and evaluation of field projects. Thoroughly grounded in AT philosophy and practices, they will also be fluent in an appropriate foreign language: Spanish, French, or Arabic. Based in the US, all will travel overseas as necessary to identify and evaluate Grant projects

Field Representatives

Four Field Representatives, based in areas identified as having excellent potential for expanded transfer and diffusion of alternative energy technologies, will have responsibilities to include:

- Identify and establish contact with local organizations
- Assist local groups in needs identification, project selection and design
- Work with indigenous organizations to develop their ability to manage and administer projects in the energy field
- Promote the viability and effectiveness of alternative energy technologies, especially by helping local and national officials recognize the energy bottlenecks that restrict development in all rural sectors
- Review organizations applying for Grants and on-site consulting, including the feasibility and merits of proposed projects
- Monitor on-going projects funded by Grants and facilitate the reception of on-site consulting by Energy Program staff and volunteer experts
- Evaluate on-going and completed on-site consultations and activities funded by Grants
- Interface program activities with AID-Missions in the sub-regions to insure effective coordination, avoid duplication of efforts, etc.

These field representatives will be development specialists thoroughly familiar with the political, economic, and cultural structures of their region. Actual field experience in the regions and fluency in appropriate language(s) will be required. When possible, individuals already residing in the regions -- especially Third World nationals -- will serve in these positions.

Administrative Coordinator

The responsibilities of this position include:

- Establish and monitor program filing system
- Coordinate logistics (travel, accommodations, etc.) for staff and volunteer travel, technical panel and selection committee meetings, and on-site consulting
- Provide full secretarial support to the Department Director
- Draft routine correspondence, as needed
- Supervise Department Support Staff

The Coordinator will have considerable experience in administrative, secretarial, and supervisory capacities.

Secretary

With the supervision of the Administrative Coordinator, the Secretary will:

- Provide full secretarial support to department staff
- Maintain staff and tickler files
- Send telex and cable messages
- Transcribe materials in English and an appropriate foreign language.
- Prepare routine translations in an appropriate foreign language

The secretary will have strong office skills and will have a working knowledge of French, Spanish, or Arabic.

Clerk Typist

Duties include:

- Type routine correspondence, reports, and other documents
- Photo copy/Mimeograph materials
- Operate word processing equipment
- Package and mail promotional, program, and other materials, as necessary

This staff person will have strong clerical skills.

Technical Assistance Officer

Responsibilities of this position include:

- Screen all incoming energy-related requests for technical assistance and determine the most appropriate response to each
- Identify the most appropriate resources (Documentation, VITA Publications, Volunteer and staff experts, Technical Panel, collaborating organizations, etc.) available to respond
- Coordinate and monitor the employment of those resources to provide timely, appropriate, and effective responses
- Facilitate the evaluation of VITA's response by obtaining requestor feedback, etc.
- Manage discretely funded projects within the energy field
- Assist in Resource Development (acquisition of documentation, development of publications, recruiting of volunteer experts, etc.) related to energy
- Supervise research assistant(s), as available

This is, at present, a half time, permanent position and is currently filled by a member of VITA's core staff. This person has overseas experience in the management of on-going field projects related to energy. This position will be expanded to full time and a second full time position will be phased in to accommodate the five-fold increase in energy related requests projected over the 5 year period of this grant.

Research Assistants

2

Supervised by the Technical Assistance Officers for Energy, the Research Assistants:

- Assist in the response to energy-related technical inquiries in such ways as:
 - Review and select relevant documentation on each inquiry
 - Identify Volunteer experts having the technical skills, overseas experience, and foreign language capability best suited to answer each inquiry
 - Contact appropriate Volunteer experts and facilitate their interaction (usually via correspondence) with requestors through on-going monitoring of response activities, follow-up contact, etc.
 - Identify resource organizations and refer appropriate inquiries for their action.
 - Other research duties, as appropriate

Both research assistants will have excellent research and communication skills, and will have backgrounds in energy, technology transfer, or economic development, especially as regarding developing countries.

Administrative Assistant

Supervised by the Director of Administration, the Administrative Assistant will:

- Establish and maintain personnel and accounting files
- Coordinate personnel services: payroll, Health Plan, Insurance, sick leave, vacations, retirement plan, other benefits for energy staff
- Provide administrative support in all accounting procedures, financial reports, budget preparation, and audits related to on-site consulting services and Grants
- Provide secretarial support to the Director of Administration in matters related to Energy Program

This person will have appropriate experience in personnel management, accounting/bookkeeping, and secretarial support.

Bi-Lingual Secretary

This full time person will:

- Maintain request and tickler files
- Provide typing support, including correspondence, reports, form letters, standard forms, etc. in both English and an appropriate foreign language
- Operate computerized Skill Bank to access data on volunteer experts
- Operate word processing equipment
- Provide other support duties, as needed

This position is supervised by the Administrative Coordinator. The secretary will have strong office skills and will be fluent in an appropriate foreign language.

Information Research Assistant

Working with and accountable to the manager of the Documentation Center, the Information Research Assistant retrieves information to fill energy-related requests from individuals and institutions in developing countries.

- Works with other Documentation Center staff members in developing bibliographies on various subject areas as needed
- Abstracts information to update card catalog
- Participates in other activities of the department as needed

This position requires good office skills and a background in research.

CRT Operators

Working with and accountable to the manager of the Documentation Center, the CRT Operators:

- Operate the in-house CRT terminal in the input and retrieval of data for daily operations of the Documentation Center
- Operate CRT terminal in conjunction with the accessing of on-line bibliographic/abstracting indexing services
- Serve as contact point for those on the VITA staff interested in retrieval of energy information
- Participate in other activities of the department

This position requires good typing skills.

Editor

The Editor will have responsibility for production of materials published under the Energy Program. This includes:

- Planning and assigning articles
- Writing and editing
- Layout
- Direction of typing and printing

Excellent skills in writing and editing, and familiarity with layout are essential.

Technical Writer

The Technical Writer will assist the Editor in the production of written materials.

- Planning
- Compilation of research
- Meeting with authors
- Writing, editing, and layout
- Direction of typing and printing

Excellent writing and editing skills and familiarity with layout are essential.

Administrative Assistant

Working closely with the Editor and Writer to facilitate production of the newsletter and energy related publications, the Administrative Assistant:

- Coordinates arrangements with non-staff writers, illustrators, translators, and other contributors
- Supervises the typist and research assistant
- Provides typing support as needed including arranging for temporary help
- Attends to the smooth functioning of the office
- Maintains files and records

This position requires excellent organizational skills, good typing, and familiarity with office procedures.

VI. REPORTING AND EVALUATION

VITA will submit periodic reports to AID detailing progress of the Energy Program. As a basis for such reports, and finally, for evaluation of the entire effort, VITA has established objectives for each of the program components. In addition, indicators have been set as measures of achievements of these objectives.

TECHNOLOGY TRANSFER SERVICES
OBJECTIVES, INDICATORS, BENCHMARKS

COMPONENT: *TECHNOLOGY TRANSFER SERVICES*

TECHNICAL RESOURCES PROGRAM

OBJECTIVES	INDICATORS	1978	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
		BASE PERIOD	1st HALF	2nd HALF								
<i>INCREASE THE POOL OF VOLUNTEERS AVAILABLE TO CONSULT IN ENERGY-RELATED FIELDS</i>	<i># OF VOLUNTEERS RECRUITED (CUMULATIVE)</i>	500		800		1,000		1,200		1,400		1,600
<i>INCREASE VOLUNTEER INVOLVEMENT IN WAYS WHICH CHANNEL COLLECTIVE TECHNICAL EXPERTISE MORE DIRECTLY TO PROBLEMS</i>	<i># OF TECHNICAL PANELS, WORKING GROUPS, ADVISORY GROUPS, ETC.</i>	3		10		15		20		25		25
<i>PROVIDE ACCESS TO VOLUNTEER ROSTER TO ORGANIZATIONALS REQUIRING SHORT-TERM CONSULTANTS</i>	<i># OF CONSULTANT NAME REFERRALS HANDLED</i>	15		20		50		75		100		125
<i>EXPAND CAPABILITY TO RESPOND TO BY-MAIL REQUESTS</i>	<i># OF ENERGY REQUESTS ANSWERED</i>	200		300		450		600		750		900

COMPONENT: TECHNOLOGY TRANSFER SERVICES

ENERGY DOCUMENTATION CENTER		1978 BASE PERIOD	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
OBJECTIVES	INDICATORS		1st HALF	2nd HALF								
SUPPORT THE EXPANDED RE- SPONSE CAPABILITY THROUGH EXPANDED ACQUISITIONS PROGRAM	# OF ENERGY-RELATED DOCUMENTS ACQUIRED (CUMULATIVE)	5,000		8,000		14,000		20,000		25,000		30,000
PREPARE FOR COMPUTERIZATION IN ORDER TO PROVIDE RESPONSE MORE QUICKLY AND EFFECTIVELY	# OF ENERGY-RELATED DOCUMENTS CLASSIFIED FOR COMPUTER ACCESS	—	2,500	5,000								
COMPUTERIZE THE DOCUMENTATION CENTER	# OF ENERGY-RELATED DOCUMENTS AVAILABLE ON COMPUTER	—	—	—	5,000	ONGOING	INPUT	MCHANISM				
	ON-LINE HOOKUPS TO OTHER DATA BASES	—										
	RESPONSE TIME DOWN BY 2/3	6 WEEKS		4 weeks	2 WEEKS							
RESPOND TO EXPANDED DEMAND CREATED BY ENERGY PROGRAM	# OF REQUESTS HANDLED	250		500				1,200				1,600
PRODUCE FROM THIS IMPROVED DATA BASE COMPENDIUMS OF IMPORTANT MATERIALS.	# OF BIBLIOGRAPHIES, DIRECTORIES, RESOURCE LISTS MADE AVAILABLE	—		5		50		100		150		300
SUPPORT THE BUILDING OF AN INT'L NETWORK (COMPONENT 2) AND HOST COUNTRY INSTITUTION CAPABILITY BY PROVIDING ACCESS TO WORLDWIDE ENERGY INFO.	TRANSFER OF MAJOR PORTIONS OF ENERGY COLLEC- TION TO # OF KEY INSTITUTIONS (CUMULATIVE)	1		3		7		10		15		20
	# OF INSTITUTIONS CONTACTED FOR NETWORKING PURPOSES THROUGH DOCUMENTATION CENTER OPERATIONS	—		50		250		350		500		500
PROVIDE SUPPORT FOR THE SUBGRANT COMPONENT THROUGH OUT REACH	# OF ORGANIZATIONS, SMALL PROJECTS ETC., COMING IN AS REQUESTORS AND RE- COMMENDED FOR FOLLOWUP	—		10		50		75		100		125
PROVIDE OPPORTUNITIES FOR VOLUNTEER INVOLVEMENT IN TECHNICAL MATERIALS PREPARATION	# OF VOLUNTEERS INVOLVED IN REVIEW AND PREPARATION OF MATERIALS	25		50		75		100		125		150

COMPONENT: *TECHNOLOGY TRANSFER SERVICES*

ON-SITE CONSULTING

OBJECTIVES	INDICATORS	1978	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
		BASE PERIOD	1st HALF	2nd HALF								
<i>MAKE AVAILABLE A LARGER # OF CONSULTANTS FROM VITA'S VOLUNTEER POOL</i>	<i># OF ON-SITE CONSULTANCIES</i>	5		10		20		30		30		30
<i>USE CONSULTANCIES TO SUPPORT OTHER ENERGY PROGRAM COMPONENTS</i>	<i># OF CONSULTANTS PROVIDED TO HELP INFORMATION CENTERS</i>	—		2		5		5		5		5
	<i># OF POTENTIAL, ADDITIONAL PROGRAMS DEFINED BY CONSULTANTS</i>			2		4		6		6		6
<i>EXTEND CAPABILITY OF ALL KINDS OF ORGANIZATIONS THROUGH USE OF CONSULTANTS</i>	<i># OF TYPES OF ORGANIZATIONS ASSISTED</i>	4		10		10		10		10		10

COMPONENT: *TECHNOLOGY TRANSFER SERVICES*

<i>COMMUNICATIONS</i>		1978	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
OBJECTIVES	INDICATORS	BASE PERIOD	1st HALF	2nd HALF								
<i>EXPAND COMMUNICATIONS ACTIVITIES TO INFORM THE DEVELOPMENT COMMUNITY OF PROGRAM ACTIVITIES</i>	<i>PRODUCTION OF ENERGY BULLETINS</i>	—	1	3	3	3	3	3	3	3	3	3
	<i>EXPANDED SPECIALIZED MAILING LIST (CUMULATIVE)</i>	300		600				1,200				1,600
	<i>SPECIAL ISSUES OF VITA NEWS</i>	—		1		1		1		1		1
	<i>PUBLICATION OF ENERGY FACT SHEETS</i>	—	1	6	6	6	6	6	6	6	6	6

COMPONENT: TECHNOLOGY TRANSFER SERVICES

EDUCATION / TRAINING

OBJECTIVES	INDICATORS	1978	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
		BASE PERIOD	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF
PRODUCE SPECIALIZED MATERIALS TO EDUCATE PUBLIC TO POSSIBILITIES FOR LOW-COST ENERGY TECHNOLOGIES	# OF TECHNICAL MANUALS/BULLE-TINS PRODUCED	—		2/3		2/6		2/6		2/6		2/6
SUPPORT ABILITY OF LOCAL INSTITUTIONS TO SUSTAIN ENERGY EFFORTS BY PROVIDING TRAINING PROGRAMS	# OF TRAINING PROGRAMS CONDUCTED	3		5		10		10		10		10
INVESTIGATE AVENUES FOR EDUCATION AND TRAINING THROUGH OTHER-THAN-PRINT MEDIA.	# OF GROUPS CONTACTED TO DETERMINE FEASIBILITY OF AND INTEREST IN USE OF AUDIO-VISUALS, FILMS, ETC.	10		25	REPLANNING BASED ON FINDINGS OF YEAR ONE							
SUPPORT EFFORTS TO OVERCOME CONSTRAINTS ON DIFFUSION BY PROVIDING CONCEPTUAL MODELS	# OF MANUALS/CASE STUDIES PUBLISHED WHICH DETAIL SUCH CONCEPTUAL MODELS	—		2		5		5		5		5
	# OF CONFERENCES WORKSHOPS SEMINARS SPONSORED	3		3		5		5		5		5

INTERNATIONAL ALTERNATIVE ENERGY NETWORK
OBJECTIVES, INDICATORS, BENCHMARKS

COMPONENT: INT'L ALTERNATIVE ENERGY NETWORK

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OBJECTIVES	INDICATORS	1978	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
		BASE PERIOD	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF
PROVIDE LOCAL ORGANIZATIONS IN DEVELOPING COUNTRIES WITH ACCESS TO CURRENT ENERGY INFORMATION	# OF ORGANIZATIONS ASSISTED	200		350		500		750		1,000		1,500
	# OF COLLABORATIVE RELATIONSHIPS ESTABLISHED	4		7		15		15		20		30
	# OF ONGOING EXCHANGE AGREEMENTS	25		50		75		100		100		100
	# OF REQUESTORS REFERRED TO OTHER VITA RESOURCES	25		100		150		200		250		300
COMPUTERIZE VITA'S INFORMATION RESOURCES AS BASE FOR GLOBAL ENERGY INFORMATION SYSTEM	# OF DOCUMENTS PREPARED FOR INPUT TO COMPUTER	0	3,000	2,100								
	# OF DOCUMENTS AVAILABLE BY COMPUTER	—			5,000	ONGOING MAINTENANCE						
	INPUT OF 15,000 CASE FILES	—	—	—	2,000	3,000	5,000	5,000				
	# OF US ON-LINE DATA BASES AVAILABLE	—	—	—	25	CONTINUAL CONTACT					→	200
	NEW ACQUISITIONS INPUT APPROX. 20-80 per month	0	800	200	250	—						→
SUPPORT ABILITY OF LOCAL INSTITUTES INVOLVED IN ENERGY DIFFUSION BY PROVIDING FUNDS	# OF INSTITUTIONS RECEIVING GRANT SUPPORT	0		5		15		20		25		30
	# OF KEY REGIONAL INFORMATION CENTERS	0		—		2		2		2		2

COMPONENT: *INT'L ALTERNATIVE ENERGY NETWORK*

OBJECTIVES	INDICATORS	1978	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
		BASE PERIOD	1st HALF	2nd HALF								
<i>CREATE MODELS FOR TECHNOLOGY TRANSFER AND DIFFUSION</i>	<i># OF TRAINING PROGRAMS</i>	—		2		5		5		5		5
	<i># OF ON-SITE CONSULTANCIES</i>	—		2		7		7		7		7
	<i># OF INFORMATION CENTERS INVOLVED IN EXCHANGES</i>	—		5		10		10		10		10
<i>SUPPORT SUBGRANTS PROGRAM</i>	<i># OF LOCAL PROJECTS/PROGRAMS RECOMMEND FOR FUNDING THROUGH NETWORK</i>	—		10		50		75		100		150
<i>SUPPORT INFORMATION FLOW AMONG DEVELOPING COUNTRIES</i>	<i># OF ORGANIZATIONS INVOLVED IN SUCH -- PARTICULARLY DUE TO NETWORK</i>	—		10		15		20		25		30

SMALL GRANTS COMPONENT
OBJECTIVES, INDICATORS, BENCHMARKS

COMPONENT: VITA SMALL GRANTS PROGRAM

OBJECTIVES	INDICATORS	1978	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
		BASE PERIOD	1st HALF	2nd HALF								
ESTABLISH BASED ON AT PHILOSOPHY AND KNOWLEDGE OF TECHNOLOGY TRANSFER MECHANISMS, CRITERIA FOR GRANT MAKING	GRANT-MAKING CRITERIA DEVELOPED	—	✓									
MAKE PROGRAM AVAILABLE TO ORGANIZATIONS WORKING DIRECTLY WITH AND THROUGH LOW-INCOME PEOPLE	# OF ORGANIZATIONS WHICH FIT CRITERIA	—		5	10	20	25	30				
FUND EFFORTS DESIGNED SPECIFICALLY TO OVERCOME THE DIFFUSION PROBLEM	# OF GRANTS MADE	—		8	16	32	32	32				
	# OF SPECIFIC, DIFFERENT INITIATIVES	—		5	10	20	20	20				
ESTABLISH A FLEXIBLE, BUT EFFECTIVE PROGRAM SELECTION COMMITTEE.	# OF MEMBERS AND VIGOR OF MEETINGS	—	✓									
SUPPORT EMERGENCE OF ORGANIZATIONS STRONG ENOUGH TO BECOME COLLABORATIVE EFFORTS	# INFORMATION CENTER COMPONENTS	—		1	2	4	6	8				
LEVERAGE OTHER FUNDS THROUGH WISE USE OF VITA EFFORT	# PROJECTS REFERRED TO OTHER, MORE APPROPRIATE FUNDING SOURCES AND/OR ABLE TO FIND MATCHING FUNDS	—		4	10	20	25	30				
ENLARGE THE EXISTING BODY OF KNOWLEDGE OF ENERGY TECHNOLOGY UTILIZATION AND TRANSFER/DIFFUSION EXPERIENCES	# DOCUMENTED EXPERIENCES INPUTTED TO ENERGY INFORMATION COMPONENT	—		10	25	100	250	500				
PROVIDE THE MOST APPROPRIATE FUNDING AT CERTAIN STAGES OF PROJECT PROGRESS (APPROPRIATE MENT & PROGRAM SUPPORTS)	# APPLICATIONS RECEIVED FOR FUNDING FOR ONE PHASE OF PROJECT BUT APPROVED FOR A DIFFERENT PHASE BASED ON INFORMATION AVAILABLE.	—		0	5	5	5	5				
ENSURE THAT EFFORTS REC'D FOR FUNDING DO NOT DUPLICATE SIMILAR EFFORTS BEING DONE ELSEWHERE	# APPLICATIONS REJECTED, BUT INITIANT PROVIDED, LINKAGES TO OTHER EXISTING EFFORTS	—		4	8	16	16	16				

COMPONENT: VITA ENERGY PROGRAM

(1)

OBJECTIVES	INDICATORS	1978	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
		BASE PERIOD	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF	1st HALF	2nd HALF
RETRIEVE, DISPAL, PROVIDE INFORMATION ON TESTED ALTERNATIVE ENERGY TECHNOLOGIES	IMPROVE MANUAL SYSTEM AND PREPARE DOCUMENTS FOR COMPUTER	2,000	2,500	2,500								
	INPUT ENERGY-RELATED INFO TO COMPUTER	—	—	—	5,000		AS	NEEDED -- ONGOING	MECHANISM			
IDENTIFY ENERGY ALTERNATIVES MOST RELEVANT TO NEEDS AND MOST POSSIBLE TO DIFFUSE	# OF LOCAL ORGANIZATIONS CONTACTED	200		400		600				800		1,000
	# OF SMALL BUSINESSES CONTACTED	5		10		20		25		50		75
	# OF FUNDERS CONTACTED TO DETERMINE WHAT IS "FUNDABLE"	5		10		20		25		50		75
ESTABLISH INTERNATIONAL ENERGY NETWORK FOR SHARING IDEAS, RESOURCES, PROJECT INFORMATION	COMPUTERIZATION OF VITA'S COMPLETE COLLECTION	—		10,000		20,000		30,000		40,000		50,000
	COMPLETION OF INTERNAL PROGRAM TO MAKE SURE DATA IS FUNNELED TO COMPUTER	—		✓								
DEVELOP A SERIES OF TECHNOLOGY TRANSFER MODELS	# OF CASE STUDIES PUBLISHED	—		2		4		4		4		4
SUPPORT DIFFUSION BY FUNDING EFFORTS SHOWING CLEAR FOCUS ON ACHIEVING THAT GOAL	GUIDELINES FOR FUNDING ESTABLISHED BASED ON OBJECTIVES AND PUBLISHED	—		✓								
	# OF GRANT APPLICATIONS RECEIVED SHOWING FOCUS	—		12		20		4		45		50

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COMPONENT: VITA ENERGY PROGRAM

(2)

OVERALL		1978 BASE PERIOD	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
OBJECTIVES	INDICATORS		1st HALF	2nd HALF								
PROVIDE APPROPRIATE MANAGEMENT AND PROGRAM SUPPORTS TO LOCAL INSTITUTIONS	# OF VOLUNTEERS IDENTIFIED AND RECRUITED TO SERVE AS CONSULTANTS	—		250		500		300		300		300
	# OF PROGRAMS REQUESTING SUCH ASSISTANCE	—		2		6		10		10		10
INVOLVE SMALL BUSINESS EXPERTISE IN OVERCOMING TECHNOLOGY TRANSFER/INFUSION CONSTRAINTS	# OF SMALL BUSINESSES IDENTIFIED AND CONTACTED	—		4		6		8		8		8
	# OF INITIATIVES DEVELOPED FOR TRANSFER BASED ON SMALL BUSINESS MODELS	—		1		2		4		4		4
PROMOTE COLLABORATIVE ACTIVITIES	# OF COLLABORATIVE PRO- GRAMS EVOLVED	—		3		5		8		10		12
SUPPORT ABILITY OF INSTITUTIONS TO LEVERAGE OTHER FUNDS	# OF PROGRAMS RECEIVING OTHER FUNDS AS A RESULT OF VITA GRANTS	—		1		3		5		8		12
	# OF PROGRAMS RECEIVING ACCESS TO FUNDING INFORMATION AND EXPANDED PROGRAM POSSIBILITIES	—		8		16		32		48		60
PROVIDE CHANNELS FOR VOLUNTEER INVOLVEMENT	# OF TECHNICAL TRAINERS, WORKING GROUPS, ADVISORY COMMITTEES	3		10		15		20		25		25
	# VOLUNTEERS RECRUITED	500		800		1,000		1,200		1,400		1,600
	# OF ON-SITE CONSULTANCIES	5		10		20		30		30		30
	# OF CONSULTANT NAME REFERRALS	15		20		50		75		100		125

COMPONENT: VITA ENERGY PROGRAM

(3)

OVERALL		1978 BASE PERIOD	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
OBJECTIVES	INDICATORS		1st HALF	2nd HALF								
	# OF REQUEST RESUMES RECEIVING VOLUNTEER INPUT	60		100		150		300		400		600
PROMOTE INTERFARE BETWEEN INITIATIVES IN US AND THOSE IN OTHER COUNTRIES	# AND NATIONALITY OF GROUPS REPRESENTED IN INTERNATIONAL NETWORK	300		600		900		1200		1400		1600
	# OF PUBLICATIONS DEVELOPED FROM DEVELOPING COUNTRY EXPERIENCE DISTRIBUTED IN US (CUMULATIVE)			150		650		1850		4350		8350
	# OF PROJECTS SHOWING CREATIVE INVOLVEMENT OF DEVELOPING AND DEVELOPED COUNTRY PARTNERS			4		8		16		20		24
PROVIDE MECHANISMS FOR EDUCATION AND TRAINING	# OF NEW INITIATIVES INVOLVING UNIVERSITIES, SCHOOLS			2		4		6		8		10
	# OF TRAINING PROGRAMS CONDUCTED	3		5		10		10		10		10
	# OF NEW DIRECTIONS TARGETED FOR EDUCATION -- EXPANDED USE OF AUDIO VISUALS, FILMS, NFE METHODS	2		4		REPLANNING		BASED		ON FINDINGS		OF YEAR END
	# OF PUBLICATIONS PREPARED WHICH SERVE AS EDUCATION TOOLS			12		20		20		20		20
SUPPORT STRENGTHENING OF DEVELOPING COUNTRY INSTITUTIONS TO ENABLE INCREASED COLLABORATION WITHIN DEVELOPING AREAS	# OF PROGRAMS FUNDED TO EXPAND INFORMATION DISSEMINATION CAPABILITY	—		1		2		4		6		8
	# OF PROGRAMS FUNDED WITH TTDC COMPONENTS			1		2		4		6		8

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COMPONENT: VITA ENERGY PROGRAM

(K)

OVERALL		1978 BASE PERIOD	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
OBJECTIVES	INDICATORS		1st HALF	2nd HALF								
PROMOTE INCOME GENERATION, JOB CREATION THROUGH TRANSFER OF ALTERNATIVE TECHNOLOGIES	# OF JOBS CREATED, INCOME PRODUCED DIRECTLY ATTRIBUTABLE TO PROGRAM				PROJECTIONS		TO	BE BASED ON	REPLANNING		AT	
	# OF JOBS, AMOUNT OF INCOME INDIRECTLY ATTRIBUTABLE				PROJECTIONS		TO BE	BASED	ON	REPLANNING	AT	
ALLEVIATE CONSTRAINTS ON TECHNOLOGY TRANSFER AND DIFFUSION	# OF PROGRAMS FUNDED			8		16		32		32		32

VII. BENEFITS

The VITA Energy Program is particularly exciting because it offers much in the way of return -- both in short and long-run terms and in terms of human as well as technological development. Here are just some of the benefits VITA sees at this point; many more will become obvious as the project continues.

- Low-income people:
 - increased chance of participation in programs because of required focus on community participation
 - improved opportunities for training, jobs
 - access to better information through local sources as the energy network takes shape
 - expanded availability of low-cost alternative energy technologies, and the resulting improvement of production and productivity in all sectors
 - improvement in quality of life resulting directly from the benefits listed above

- Implementing organizations in developing countries:
 - increased access to documentation and other forms of technical backstopping now hard to find
 - support for all types of efforts -- technical research and development, information center setup, management capacity strengthening -- as long as they are focused on technology transfer and diffusion
 - assistance with preparation of funding documents as needed
 - availability of more open channels to funding with less time lag

- AID:
 - access to a much improved base for program consideration in the field -- both in terms of technical information and organization
 - participation in a program designed to increase greatly AID's ability to reach the poor
 - ability to test certain ideas and suppositions vis-a-vis low-cost alternative energy technologies
 - improved ability to support field programs through access to VITA technical experts
 - series of publications designed to do much toward disseminating AID-sponsored efforts

- enhanced capability for programming future technical assistance activities
- increased involvement in international development efforts by the private sector -- individuals, small businesses, PVOs, church affiliates
- Cooperating agencies in developed countries:
 - access to a much expanded information base
 - models for project implementation
 - participation in a global network. For small business, this can mean new markets and increased opportunity.
 - new opportunities for growth as the range of organizations and what each is doing comes into clearer focus
- VITA:
 - much expanded capacity to store, retrieve and provide technical documentation
 - a computerized energy data base and project information retrieval system which can be expanded to cover all technical areas
 - greatly increased pool of volunteer experts having background in alternative energy sources/applications
 - new publications for distribution

VIII. VITA CAPABILITY

INTRODUCTION

It is doubtful that there is in existence at this time any other organization having equal capacity to undertake the effort outlined in this proposal. VITA is without doubt recognized as a leader in efforts to assure that technology is made available and appropriate to as many as possible. VITA has all the necessary resources upon which the program must be based, plus the articulated philosophy and policies to insure that it is carried out wisely. If it is indeed time to test the viability of alternative energy technologies to "make a difference," and if such testing depends upon programming for successful technology transfer and diffusion, that testing, for best results, should be carried out by VITA.

BACKGROUND

VITA is a private, non-profit, development organization based in the United States. For nearly 20 years VITA has been serving the needs of individuals and organizations throughout the developing world by responding to technical inquiries each month. These requests for assistance come not only from Third World government agencies, but also from small business managers, farmers, missionaries, co-operatives, and other development organizations (both indigenous and international).

Most inquiries addressed to VITA receive the direct attention of VITA Volunteers. These Volunteers are professionals -- scientists, engineers, educators, businessmen, and others -- who donate a few hours a month to answer these questions from abroad. From a computerized roster listing Volunteers' skills, VITA's staff selects those persons who have the knowledge and experience to effectively answer an inquiry. These Volunteers are then put directly in touch with the requestor and they correspond until the requestor's problem is answered. At times, VITA organizes interdisciplinary teams to work on a specific request. Also, where possible, VITA sends Volunteers on-site to advise and help implement suggestions. VITA Volunteers have even traveled at their own expense to provide assistance.

VITA also provides many requestors with useful materials from its Documentation Center. Today the center contains over 50,000 books, pamphlets, articles, documents, periodicals, plans, and other printed items containing information on diverse technologies of interest to developing countries. Much of this material has been collected in response to previous inquiries and VITA continuously strives to expand and update its collection.

In these resources lies VITA's strength and effectiveness. It is directly responsive to the needs of developing countries and it provides an efficient system of applying the expertise of an international network of concerned individuals to the solution of these problems.

VITA SERVICE -- A GENERAL OVERVIEW

Consulting Services. VITA's Volunteer and staff experts are available for short-term consulting assignments in developing countries, and in the United States. VITA consultants, during the last five years have provided on-site assistance in 14 countries, including:

- a. Design and Planning Assistance on Self-Help Housing (Colombia, 1976) for the Universidad de Bucaramanga.

- b. Planning and Technical Assistance, Small-Scale Manufacture of Agricultural Implements (Zaire, 1976-1978) for the Christian Council of Zaire.
- c. State of the Art Report, Small-Scale Coconut Fiber Processing Technology (Brazil, 1977) for Uniao Nordeste de Assistencia a Pequenas Organizacoes (Published in Portuguese as "A Desfibracao de Coco").
- d. Training Program in Rammed Earth Block Making Technology (Philippines, 1977) for the International Bank for Reconstruction and Development (World Bank).
- e. Solar Energy Feasibility Study (Mauritania, 1977) for USAID/Mauritania.
- f. Wind Energy Feasibility Study (Mexico, 1978) for the Instituto de Investigaciones Electricas.

Project Planning and Evaluation. VITA works to assist local development agencies and international public and private aid agencies in designing better projects and in evaluating projects which have been submitted to them for funding. Examples of specific work done in this area include:

- a. Project Design Assistance (1974-1975) to Servicio de Documentacion (Nicaragua).
- b. Project Design Assistance (1974-1976) to Voluntarios para la Asistencia Technica - Honduras (Honduras).
- c. Project Evaluation -- Animal Husbandry Project (1975) for the Coalition for Development (Philippines).
- d. Project Evaluation -- Poultry Raising Project (1976) for Technoserve, Inc. (Kenya).
- e. Project Evaluation -- Fish Farming Project (1976) for Catholic Relief Services (Tanzania).
- f. VITA also has a contract with the IBRD (World Bank) to evaluate the A.T. components of Bank-funded projects and to provide technical information, arrange seminars, etc. in an effort to assist Bank project personnel in identifying areas for increased Bank involvement in A.T.

Technology Assessment/Activities Surveys. VITA is frequently called upon to survey the range of technologies utilized in a given community, country, or region. VITA also conducts surveys of organizations active in specific regions or in specific lines of research. Examples include:

- a. Appropriate Technology in Latin America (1976) -- A survey of institutions active in A.T. throughout the region, for USAID.
- b. Development Resources in Africa (1977-1978) -- A survey of resource organizations and of services available to development workers. To be published by VITA in April 1979.

- c. Small Farm Food and Agricultural Technologies in Central America (1978-1979) -- An on-going survey of institutions and projects **currently active** in efforts to increase food production in Central America.

Technical Assistance Support Contracts. VITA also extends expanded technical assistance on a long-term contractual basis to U.S. Peace Corps Volunteers in the field (1968 to 1978, renewal pending), to member agencies of PACT (Private Agencies Collaborating Together), a consortium of 18 U.S. and Third World development groups (since 1975) and to Church World Service (since 1976).

Training and Institutional Development. Through a variety of training programs and cooperative project efforts, VITA works to enhance the ability of Third World development agencies and both public and private aid agencies to contribute to economic and social development. Examples of recent VITA program efforts in this area include:

- a. A joint project with the Societe Africaine des Etudes et de Developement (1976-1979) to develop an A.T. research and development center in Upper Volta together with a documentation center and outreach program. VITA included stationing a staff member at the center for two years and providing a six week training course on information systems and A.T., held in the United States, for the center's director. VITA also provided extensive pre-departure training for two Peace Corps Volunteers who were assigned to the center. Similar training for four additional Peace Corps Volunteers for the center is scheduled to take place in early 1979.
- b. In cooperation with International Voluntary Services, the University of Technology (Lae), the Liklik Buk Information Center and the Appropriate Technology Development Unit; VITA is working to promote, develop, and disseminate A.T. in Papua, New Guinea. The initial project effort (1976-1979) includes the stationing of a VITA Volunteer in PNG and the training (in the United States) of the Liklik Buk Information Center's documentalist. The project also involves outreach efforts into the interior to identify needs and access resources in isolated villages.
- c. With funding from Appropriate Technology International, VITA conducted a three week training course for project officers from four Central American development groups active in A.T. The course brought together experts in agriculture, alternative energy, water resources, housing and construction, and small industries who worked with the trainees in identifying technologies suited to their organizational needs.

Publications. VITA publishes approximately 50 manuals and nearly 100 technical bulletins covering basic technologies that have demonstrated potential in developing countries. Many of the technologies described were developed out of VITA's own development efforts; others were independently developed by field workers. VITA also distributes 40 books published by other organizations, including several Third World groups. Over 40,000 manuals and bulletins are distributed each year. VITA also works with local development agencies to assist them in developing their own publishing and marketing capabilities.

Among the major items published under contract to other organizations are the following:

- a. Evaluation of Solar Cookers (1961) for U.S. Department of Commerce/Office of Technical Services.
- b. Village Technology Handbook, Volume I (1963) and Volume II (1964) for U.S. Agency for International Development.
- c. The Planning, Installation, and Maintenance of Low-Voltage Rural Electrification Systems and Subsystems (1969) for U.S. Peace Corps.
- d. Construction and Maintenance of Water Wells (1969) for U.S. Peace Corps.
- e. Water Purification, Distribution, and Sewage Disposal (1969) for U.S. Peace Corps.
- f. Appropriate Technologies for Development: Freshwater Fish Pond Culture and Management (1976) for Action/Peace Corps.
- g. Appropriate Technologies for Development: Small Farm Grain Storage (1976) for Action/Peace Corps.
- h. A Selective Listing: Appropriate Technology and Energy Literature (1977) for Wakefield Associates, Inc.
- i. Appropriate Technologies for Development: Reforestation in Arid Lands (1977) for Action/Peace Corps.
- j. The Village Texturizer: A Low-Cost Machine for Preparing Texturized Food Products at the Village Level (1977) for Meals for Millions Foundation, Inc.
- k. Environmentally Sound Agriculture Projects: Guidelines for Planning (Scheduled for publication: (1979) for Mohonk Trust.
- l. Woodstove Design Manual (Scheduled for publication: (1979) for Al Dir'iyah Institute.

ENERGY-SPECIFIC CAPABILITY

For many years, VITA has been a leader in the search for and development of alternative sources of energy appropriate for the Third World. Since the organization's beginning, there have been over two thousand requests for information and assistance on low-cost energy problems. As a result of these inquiries, VITA has worked on a vast number of alternative energy technologies and their applications -- from solar cookers to water turbines to bio-gas generators to windmills for all purposes. The figures below show that energy questions constitute a large, rapidly increasing percentage of total requests each year.

<u>YEAR</u>	<u>NUMBER OF REQUESTS</u>	<u>PERCENTAGE OF TOTAL REQUESTS</u>
1972	47	3%
1973	71	7%
1974	147	14%
1975	123	14%
1976	164	14%
1977	166	16%
1978	268	19%

The following examples demonstrate VITA's involvement in the energy field:

Methane Project In Ecuador -- With aid from VITA Volunteers, a Peace Corps Volunteer built a digester for Ecuador's first methane plant. The methane plant has helped alleviate two major problems. First, the methane has provided a partial substitute for firewood. This has saved the community a tremendous amount of money and labor since all trees are privately owned and a week's wood costs a total of 40 hours labor, adding collecting and in-kind payment. Now the methane is extensively used in local bread-baking operations. Second, huge, unhealthy quantities of cattle manure which had previously been discarded are now safely and systematically applied to the fields (in the form of digester sludge) as fertilizer.

Hydro-Turbines In Papua New Guinea -- As part of the attempt to slow urban migration, VITA's Papua New Guinea Field Representative is involved in a small low-cost hydroelectric power project in the isolated village of Baidoang. He has asked VITA Volunteers for simple yet effective approaches to governing the speed of hydro-turbines. As an engineer with a deep understanding of Papua New Guinea, he has laid out some of the design problems on which VITA Volunteers are working. A number of Volunteers are in touch, corresponding with VITA's representative and working to find a useful solution that will enable Baidoang and ultimately many other villages to have inexpensive electricity. Currently, there are plans to provide electricity for five more villages.

Windmills In Tanzania -- In response to Tanzania's interest in developing "low-cost locally made devices for the nation's water supplies," a former VITA employee corresponded with a dozen members of the VITA Volunteers' Wind Energy Group. The group helped him design and build an inexpensive windmill pumping system adapted to local irrigation needs. The Tanzanian Water Ministry contributed funds for establishing a workshop to test this and other VITA-generated ideas on pumping water. Considerable local approval has led to the construction of 12 windmills and pumps in rural areas. The results of this project have been published in a VITA manual.

Malawi Water Wheel -- Because of cassava crops failures, the Malawi Government urged farmers to plant corn as a substitute. A medical officer then wrote to VITA asking for information on water-powered mills to grind the corn. VITA coordinated all the correspondence between the requestor, many VITA Volunteers and several commercial milling firms. One by one the problems of wheel and millstone design, housing, and the quality of the milled corn were worked out by this group of contributors. The assistance the VITA system provided the requestor in Malawi ultimately resulted in the construction and operation of a small water-powered milling business.

Largely because of its extensive documentation on alternative sources of energy, VITA has participated in a number of studies and research programs in the energy field. These studies include the National Academy of Sciences publication on Renewable Energy for Developing Countries, and the U.N. Energy Resources Department publication Proceedings of the Meeting of the Expert Working Groups on the Use of Solar and Wind Energy.

Another tremendously valuable output of VITA's is its set of publications. With the assistance of VITA Volunteers and staff, 11 pamphlets, manuals and handbooks have been written and published on energy subjects ranging from solar cookers to low-cost windmills.

VITA has also published several energy-related "Technical Bulletins." These include plans and case studies which present ideas and technological alternatives for experimentation, adaptation and practical use. The "Technical Bulletins" offer some of the best from VITA Volunteers and other specialists throughout the world.

The importance of VITA publications cannot be overemphasized since they aim to offer technologies applicable not merely to one particular country or problem, but to the whole developing world. The effectiveness of these publications can best be measured by the ever-growing demand for them. Particularly in the energy field where clearly written and illustrated manuals can present useful and badly needed information, VITA feels that it has to increase its efforts. Twelve new energy-related manuals are scheduled for publication in the near future, as part of a contract to produce background materials for the Peace Corps training program.

VITA has also convened a number of Technical Panels, composed of Volunteer (and other) experts to evaluate the **state** of the art in selected low-cost energy technologies and to discuss promising new directions recommended for further research and testing. Past panels have included: Charcoal Briquetting (1975), Fuel Efficient Lime Production (1976), Solar Salt Production (1977), and Wind Energy (1979).

This last panel was part of a joint Washington University-VITA project, funded by AID, to identify likely areas for applied A.T. research and development efforts. Other panels will be brought together later in 1979 to conduct similar reviews of solar energy alternatives and wood fuel utilization.