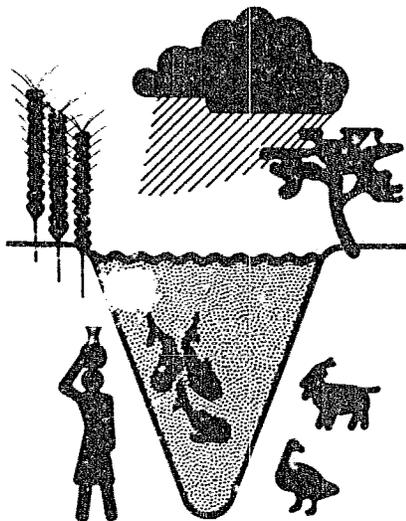


# The Water Harvesting/Aquaculture Project (WHAP): Final Evaluation Report

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Contact: Phyllis Stiles  
Center for PVO/University Collaboration in Development  
Bird Building , Western Carolina University  
Cullowhee, NC 28723  
704-227-7492

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## Executive Summary

The Center for PVO/University Collaboration in Development (PVO/University Center) received funding for five years from A.I.D., FVA/PVC to administer the Water Harvesting/Aquaculture Project (WHAP). This final, internal evaluation assesses: a) the responses of six PVO field projects in six developing countries to the assistance provided to them by WHAP (Section Two of the report); and, b) the attitude of the project's Advisory Council toward the collaborative management process (Section Three of the report). Project background, minor summaries of overall project inputs and outputs, and conclusions are included as well as Section One. More exhaustive information about inputs and outputs is supplied in the companion report--the Final Report of the Water Harvesting/Aquaculture Project. The information for this evaluation was drawn from project monitoring and responses to questionnaires provided to the Advisory Council and the participating field projects. Evaluations in the field were conducted by PVO field project staff. These evaluation activities were undertaken with very little financial support as the evaluation budget was eliminated after WHAP's external evaluation was conducted in project year three. WHAP's Information/Documentation Officer designed the evaluation plan with the assistance of the project's policy-making body, the Advisory Council.

This evaluation was conducted primarily for the information of WHAP participants: Auburn University, CARE, Catholic Relief Services, Church World Service, Heifer Project International, Lutheran World Relief, and Save the Children. The results of this evaluation are also expected to provide general inputs to the FVA/PVC and S & T review process for future proposals from the PVO/University Center. The report responds to the four major questions of concern below as well as other implied questions.

The objective of the evaluation was to critically examine WHAP's performance in achieving project goals and purposes in order to answer four major questions:

1. What was the value of introducing the technology of water harvesting and integrated agriculture/aquaculture to selected PVOs?
2. Of what value was this technology to the intended beneficiaries?
3. What was the value of the collaborative management style used to WHAP's PVO and university participants?
4. Should the PVO/University Center receive future funding to include other management strategies and additional technologies?

### The Technology

In general, the evaluation revealed a positive attitude toward WHAP both on the part of the Advisory Council and the six field projects questioned. All felt the technology was worthwhile to the beneficiaries and to the PVOs as a development intervention. The reports of the six participating field projects indicated clearly that the technology is adaptable to a wide range of environmental, social, and financial contexts. At one site, it was used mostly for income generation, while at other sites, it was used primarily as a means of providing nutrition to small farm families.

It is a relatively new sector for the PVOs and they generally agree that additional training would be useful. In the six projects evaluated, nonetheless, hard data indicates that the technology can be used by PVO staff and the beneficiary population with very diverse skill levels. These projects indicate that technology transfer (i.e. trial and acceptance of technology by the participant population) is achievable in just two to three years with proper monitoring and guidance.

In almost every case, our documentation shows that field projects began as a result of some PVO staff or counterpart having attended a regional training. During each visit, consultants communicated with local resource persons whenever possible. They made recommendations on every aspect of implementation from: staffing needs, to fingerling suppliers, to pond construction, to pond management. It was an all-purpose approach to technical support. Perhaps, most importantly, the consultants recommended practices which were, first and foremost, appropriate to the capabilities of the pond managers involved.

### Sustainability

There are several indicators of sustainability. The technology applied promoted environmentally regenerative actions. It used no pesticides or toxic substances which might damage the environment. It harvested water that might otherwise have flooded or eroded the environment and used the water to produce a valuable agricultural product which is both protein-rich and marketable. It used locally available materials. Water harvesting and aquaculture proved to be within the means of most subsistence farmers and evidence suggests it usually pays for itself within a few years. Moreover, maintenance was minimal except during occasional harvests.

In almost every case, an existing local committee accepted the responsibility for pond management. Otherwise, a new committee was formed. They took the form of cooperatives, women's groups, or simply pond management committees--at least 131 such committees are on record.

PVO staff were trained to prepare them to train family or community pond owners. Over 4000 beneficiaries were trained on site by the PVOs. Training was an integral part of the project; many WHAP consultancies included short, site-specific trainings.

### Economics

There was also a general belief that this type of project leverages more human and material resources for less money, and that it utilizes each participant "where they are strongest" whether that is community organization, project management, or aquaculture training. WHAP spent \$1,435,877 over five years providing 107 technical assistance visits to 51 field projects in 27 countries and conducting 13 trainings for 164 individuals representing 40 countries. Almost \$100,000 was spent on nine small project grants. By using the PVOs as field project designers and implementers, each project was tailored to fit the financial means of the beneficiaries. Communities tended to excavate large ponds while families dug small ponds. And, in almost every instance, only locally available materials were used, including fish fingerlings. Human resources were emphasized and rarely was heavy, expensive equipment necessary. Feasibility studies were conducted to determine whether (integrated) aquaculture was the most lucrative use of the land. The farmers reported, most of the time, that fish are more profitable than alternative agricultural products. In some cases, ponds were constructed on land that was otherwise non-productive. Many projects tended to be in remote areas where employment was very scarce. Oftentimes, the fish ponds provided a means for the father of the household to remain at home rather than leaving in search of work.

## The PVO/University Center's Management Style

WHAP seems to have fulfilled its role as the pioneer for future collaborative projects between universities and PVOs. The PVO/University Center also established its function as facilitator through WHAP. With the best interests of the overall project at heart, it was able to be an impartial facilitator and mediator intercepting and interpreting messages being transmitted from a multitude of directions.

The Advisory Council felt that the collaboration would not have taken place to the extent it did, were it not for a mediating third body, such as the Center, facilitating the process. Notably, in spite of the fact that eight organizations/institutions were involved, there appeared to be no major logistical or communications problems. In the words of two advisory council members:

"[The PVO/University Center played] a critical role. They provided the staff expertise to manage what could have been an unproductive gathering of separate PVOs and universities, seeming to be ready to cooperate, but needing careful stroking, guidance, encouragement, and from time to time, read the riot act. They gave A.I.D. a high value product for a low cost."

"The advantages of having the Center facilitate and administer the program are two-fold: Having a third body conduct these essential tasks ensured that Auburn's services would be provided to a number of PVOs. Having a third body to conduct the administrative and reporting functions to A.I.D. allowed each PVO to maintain their diverse management systems and not have to adopt special systems for the WHAP activities only. Further, it allowed A.I.D. to have only one point of contact for the grant rather than one for each PVO."

## WHAP Shares Credit For Accomplishments

The achievements of individual field projects described in this evaluation are the result of complex collaboration between rural families and several development agencies and institutions. Unlike the more common type of AID-funded project which is designed to begin and conclude an intervention, WHAP contributed to many efforts, each at a different stage of development with a multitude of purposes and methodologies, and supported to various degrees, by community, national, and international groups. We readily acknowledge that many of the "outputs" cited in this report did not result exclusively from a WHAP intervention. The achievements in each PVO field project are based on the dedication and handwork of PVO staff, Peace Corps Volunteers, government extension technicians, and the farmers who participated. But ultimately, it was the rural people's willingness to participate and utilize the assistance offered by the project that made it a success. However, we consider that PVO/university collaboration in WHAP brought about results that possibly would not have happened otherwise. The availability to PVOs of training and technical information on water harvesting/aquaculture reinforced "weak links" in many ongoing projects, and, in other instances, prevented costly and unproductive efforts where water harvesting/aquaculture technologies were desirable but technically unfeasible.

## SECTION ONE: EVALUATION REPORT

The Water Harvesting/Aquaculture Project (WHAP)--Cooperative Agreement No. PDC-0204-G-SS-4085-00 between the Center for PVO/University Collaboration in Development (PVO/University Center) and A.I.D., FVA/PVC--began in September 1984 and was completed September 1989. This nearly \$1.5 million project was funded by U.S.A.I.D. for three years, and received an additional two years of funding after a favorable evaluation in the third year. A final internal evaluation has been conducted in the last months of the project; the results of that effort are summarized below.

### I. OBJECTIVES OF THE FINAL EVALUATION

The major objective of the final evaluation was to assess progress from the point of view of the participants toward stated project goals and purposes as a basis for decisions concerning:

- a) the value of introducing water harvesting and integrated agri/aquaculture (WHIAA) as a new technology for PVOs;
- b) the value of the technology to the intended beneficiaries;
- c) the value of the collaborative methodology to the university and PVO participants; and
- d) future funding of the PVO/University Center to include other strategies and additional technologies.

This evaluation also inherently tests the feasibility of collaborative self-evaluation.

The participatory approach has been the modus operandi from early project development until project completion. As the mandate of the PVO/University Center is to facilitate collaboration between universities and PVOs and the WHAP was the PVO/University Center's first funded effort, this evaluation report will address not only WHAP's specific goals and purposes, but also the larger issue of collaborative project management--its advantages and constraints.

### II. PROJECT GOALS AND PURPOSES

The project goal was to improve the quality of rural life in selected developing countries through the introduction of improved technology in ways that will match local capacity for development to community needs and potentials.

Subgoals were:

- a) To design, implement, and evaluate a process strategy of rural development, using water harvesting/aquaculture as a core intervention and accelerator of rural development; and,
- b) To design, implement, and evaluate a collaborative management methodology involving PVOs and universities in the development of new rural development strategies and techniques for delivering technical, organizational, and material resources for development.

Initially, there were three project purposes:

- a) To design and implement a series of field projects which would be directed toward:
  - 1) Moving villages toward self-sufficiency in water for household use, stock watering, garden irrigation and, where appropriate, drinking water; and
  - 2) Villages developing fish production through aquaculture for family consumption and marketing.
- b) To more effectively deliver and utilize water harvesting/aquaculture technical assistance and other resources by linkage with PVOs and local groups to stimulate local resource commitment and participation and skills acquisition.
- c) To identify and develop new and innovative strategies/methods of utilizing technical

assistance, management, and material resources, including Food for Peace resources, to solve key development problems.

The project purposes as revised for the evaluation scope of work in year four are:

- a) To foster the design and implementation of a series of PVO-sponsored field projects in a variety of countries and rural settings; (These field projects will be directed toward the collection of run-off water into small ponds and the introduction and support of fish production at the community level, bringing much needed protein to the beneficiaries' diets and possibly added income. Water harvested may also be used for any number of other activities which may include household use, stock watering, and garden irrigation.); and,
- b) To develop a collaborative management methodology involving universities and PVOs.

### **III. BACKGROUND ON THE EVALUATION**

#### **A. Origins of the Evaluation**

Initially, the budget included the salary of an evaluation and monitoring specialist who developed extensive information gathering devices during the first two years of the project. At the end of year three, a mid-course external evaluation was conducted. As a result of that evaluation, the specialist's position was eliminated along with all evaluation funding for the subsequent two years. Nevertheless, A.I.D. requested a final evaluation be conducted and the Advisory Council agreed, but how, with no funds?

The Council elected to extend the concept of project collaboration one step further by self-evaluating and by forming evaluation teams comprised of at least one representative from a neighboring PVO WHAP project, wherever possible, to assess WHAP's impact on selected field projects. To assess the viability of the management structure used, the Council agreed to add a second component to the evaluation: a survey of the Council representatives about the collaborative management methodology. A scope of work was drafted and approved by A.I.D. in Spring 1988. (See Attachment: "Scope of Work.") During the last two years of WHAP, the budget for monitoring was used to cover these limited evaluation costs.

#### **B. Methodology**

This modest evaluation chronicles WHAP's involvement with six field projects and the Advisory Council's view of the overall process. Any conclusions that may be drawn from the experience of the participating projects are clearly by inference. The questionnaires answered by the Council are intended to address specific questions and to indicate some universality in project conduct. This approach should indicate generally what the project has been able to accomplish and how.

The evaluation scope of work identifies project goals and purposes for review during evaluation. It explains the two techniques to be used for that review:

- a) selected field projects have (approximately) three day assessments of WHAP's impact on them to be conducted by on-site project staff with the assistance of staff from another PVO using the evaluation procedures of the sponsoring PVO ; and,
- b) the Advisory Council responds to brief questionnaires about the style of management used since it is they who have been intimately involved in the project management.

In order to select representative field projects, Auburn was asked to suggest approximately ten projects that met the following criteria:

- a) The project is included in the current workplan as a project of primary or secondary focus (Projects of "primary focus" were at a relatively advanced stage of development and were expected to demonstrate significant measurable impact by the end of the project, and

accordingly, would receive priority attention until then; projects of "secondary focus", on the other hand, were at an earlier stage of development and were not expected to demonstrate significant measurable impact by EOP.) ;

- b) It has reached Stage 3 of the "Stages of Development" as outlined in the current Workplan (Briefly the stages of development are: (1) Awareness of WHAP<sup>P</sup> technology among PVO country mission staff, (2) Interest in including WHAP initiatives in the program, (3) Trial of water harvesting and aquaculture technology, and (4) Extension of water harvesting/aquaculture technology to intended beneficiaries.);
- c) It has received at least three WHAP technical assistance visits;
- d) It is willing to undergo a collaborative evaluation; and
- e) It has the organizational capacity to conduct the evaluation before May 1989.

Auburn suggested field projects which they felt would represent WHAP's varying degrees of involvement, some extensive, some slight. Those projects were then notified by headquarters staff of WHAP's interest in having them evaluate WHAP. The resulting group of six who participated represent the three broad regions of the developing world and three PVOs.

Guidelines for the evaluation were purposely very informal in order to allow cross-fertilization of PVO evaluation styles to occur between collaborating partners. All but one project was given a summary of its WHAP inputs and outputs. That project was not expected to evaluate and due to this miscommunication, was not supplied with a monitoring summary. That information was to be verified during the evaluation. Field evaluation reports are included in Section Two of this paper. The individual methodology used is explained within each report.

Meanwhile, Council members were mailed simple questionnaires to complete and encouraged to consult with their colleagues about the constraints and advantages of the participatory management style used in WHAP. All of these efforts were conducted voluntarily without compensation.

### C. Project Overview

The Center for PVO/University Collaboration in Development (formerly the Joint PVO/University Rural Development Center) is the project holder with over thirty U.S. PVO and university members. The project grew from the interest of Auburn University's International Center for Aquaculture (ICA) in seeing its technical capabilities applied at the grassroots level to the benefit of the rural poor in the developing world and the PVO/University Center's desire to foster collaboration between universities and PVOs by delivering appropriate technical assistance at the village level. Working together, the PVO/University Center, Auburn and several member PVOs, developed and submitted an unsolicited proposal to U.S.A.I.D.

Original participants were CARE, the Cooperative League of the USA (CLUSA)--now the National Cooperative Business Association, the International Center for Aquaculture (Auburn University), Lutheran World Relief, and the South East Consortium for International Development (SECID). SECID and CLUSA dropped out early on and Catholic Relief Services, Church World Service, Save the Children, and Heifer Project International joined later.

The PVO/University Center was responsible for facilitating the collaboration, fiscal management, information collection and dissemination, evaluation, and overall administration. Auburn University was under subcontract to provide all technical backstopping, and provide or produce any technical materials needed. It also was a member of the Advisory Council like all other participants. Each of the six PVOs were represented on the Council and provided nearly all funding for adding the new technology to existing field projects.

WHAP gradually introduced or expanded on the technology of impounding water and exploiting

that water resource--through aquaculture, irrigation, livestock rearing, and gardening--via six four-day to two-week familiarization training sessions during the first two years of project operation. Initial trainings were designed to introduce concepts to decision makers and planners at headquarters, then field staff through regional trainings, and later, project participants looking for answers after having worked with trial ponds. The WHAP Director and Technical Coordinator from Auburn followed trainings with programming visits to inform PVO staff in-country of the benefits available to them through WHAP. Meanwhile, as field projects committed to integrating water harvesting and/or integrated agriculture and aquaculture into their projects, technical experts from Auburn made site visits to conduct feasibility studies and to identify in-country resources for information and backstopping. Field projects were invited to request small project grants of up to \$15,000 to integrate this new technology into their programming. Once ponds were sited and constructed, consultants returned as needed to train, evaluate, and/or make suggestions for improvement.

#### **D. Evaluation Constraints**

By WHAP's nature, it is removed from the field projects it serves. From its inception, it emphasized to the PVOs that PVO field projects would remain autonomous. WHAP consultants were available to train and advise them and limited project support funds were available. Hence, reporting has been inconsistent and baseline data nearly impossible to collect, especially after the decision to curtail the evaluation component. For that reason, this evaluation is a predominantly subjective and qualitative assessment of the service provided by WHAP by the PVOs served. It is unsophisticated, yet it seeks to learn firsthand how well the service was received and utilized by identifying measurable benefits.

Six PVO field projects agreed to assess WHAP's impact on their projects and the members of the Advisory Council agreed to answer questions concerning the management mode used to facilitate collaboration. These six projects were not randomly selected and this evaluation was never intended to represent the entire project. However, as varied as the outputs of these field projects are, the interaction and benefits they received are indeed indicative of those of the project as a whole. Also, the management methods discussed by the Advisory Council were used consistently throughout the project and for all participants.

#### **E. Advantages of Self-Evaluation**

This technique is very low-cost and extends the participatory management style to make project implementors also evaluators. Co-evaluators report that the experience gained and the cross fertilization that occurred from the process is worthwhile and valuable in itself. In fact, this participation sparked new interest in the WHIAA technology on the part of the LWR representative who assisted CARE/Guatemala. When participants self-evaluate, they make a personal investment and seek answers which will influence decisions to be involved in similar projects in the future. Other than the PVO/University Center staff time and travel involved in developing and overseeing this evaluation, the only direct expense to WHAP was that of the LWR headquarters representative's trip to co-evaluate CARE/Guatemala at \$878. The participating PVO field staff time consisted of approximately three days to one week per project.

#### **F. Diversity of Field Projects Selected for Evaluation**

The field projects that participated in the evaluation were: CARE/Guatemala, HPI/Sierra Leone, HPI/Thailand, SCF/Bolivia, SCF/Bangladesh, and SCF/Nepal. Thus, three private voluntary organizations were represented in Latin America, Africa, and Asia. In terms of selection criteria, all of these projects were considered to be of primary focus in the workplan except HPI/Sierra Leone which was of secondary focus. By the time of the evaluation, all of these projects had reached at

least development stage three in which the technology is being implemented and tested. The projects, and WHAP's assistance to them, were varied. They were drawn from an overall WHAP roster of 51 field projects visited in 27 countries over the life of the project. They have all received at least three WHAP technical visits with the exception of Sierra Leone and Bolivia which received two visits each (a slight departure from the selection criteria). CARE/Guatemala received the most technical assistance visits at six. SCF/Bangladesh received a project support grant and three visits while SCF/Nepal received a project support grant and four visits. WHAP conducted training workshops on-site specifically for SCF/Nepal and SCF/Bolivia staff. CARE/Guatemala's aquaculture project was already well underway when WHAP assistance was requested, whereas, the other projects had little or no experience with water harvesting or aquaculture.

The projects themselves are vastly different:

CARE/Guatemala's Family Fish Pond Extension Project began in 1983. Its main purpose was to improve the nutrition and income generation levels of approximately 400 participating rural families through construction of fish ponds. The later CARE project, Integrated Aquaculture Extension, built on the previous project and was begun in 1986. This project emphasizes combining animal production with fish raising as well as comprehensive transfer of skills to farmers, which includes careful record keeping. This project has impacted 9000 direct beneficiaries, with a total of 812 ponds, and an A.I.D. budget of \$500,000 along with extension help from Peace Corps volunteers and the GOG agency, DIGESEPE.

HPI/Sierra Leone's aquaculture training project is a collaborative endeavor involving the Near East Foundation, Heifer Project International, and the United Christian Council in cooperation with two teacher training schools: Bo Teacher's College and SAIDAC. Begun in early 1988, this project seeks to establish demonstration sites at each school and to train 300 students and 10 United Christian Council technicians who will transfer the technology to villagers after their graduation and re-entry into communities as teachers.

HPI/Thailand's water harvesting/aquaculture project began after, then manager of the Center for the Uplift of the Hill Tribes (CUHT), Sunny Danpongpee, attended a WHAP regional training in Indonesia in 1985. The thrust of this project was training students at CUHT in fish production as a complement to their religious training using the Center as a demonstration site. In this way, fifty students each year would carry the new technology into the field. Village extension has evolved as the current focus of the project. This project is actually run by the Thailand Karen Baptist Convention and serves about 2235 people.

SCF/Bangladesh used fish production as an income generator for a primary school, a health clinic, women's health services, and interventions for nutritionally at-risk children. The health center serves a population of 8,500 villagers and the primary school serves 1156 families, the same number served by women's and children's health activities.

SCF/Bolivia is concentrating on agricultural development due to the high incidence of malnutrition in the remote Inquisivi area. Local residents requested assistance from SCF in fish farming technology and SCF concluded that fish farming would be a worthwhile complement to their other activities. The program is small involving eight communities with four community ponds and 22 family ponds. The farmers pay for the ponds with no outside assistance.

SCF/Nepal has been implementing a Community-Based Integrated Rural Development program (CBIRD) in Gorkha District since 1981. Agriculture and economic development, however, were added to the program later. Aquaculture is considered to have income-generating potential for small farmers there. Although Nepal received its first WHAP visit in 1985, by 1989 only sixteen ponds will have been constructed. SCF offers participating farmers a grant of \$50 in start-up funds and

the farmers are responsible for locating the balance. The SCF/Nepal philosophy is that each pond must be a success if the technology is to catch on.

This diversity demonstrates the flexibility of WHAP which was ultimately to the project's advantage.

#### **IV. INDICATORS OF PROJECT IMPACT**

##### **A. Impact on PVO Programming**

WHAP's mission was to introduce this concept to PVOs as something which would work on a small-scale with low cash requirements both for pond start-up and maintenance. Costs are dealt with in the individual field evaluations provided in Section Two of this report. As for the introduction of the concept into PVO programming, that was accomplished in varying degrees. Some PVOs had been involved with water harvesting, fisheries, or irrigation in a limited way prior to joining WHAP. CARE was very active in an aquaculture project in Guatemala and felt WHAP offered the technical backstopping capability it needed. On the other hand, CRS had worked with wells, capping springs, and piping water for potable water purposes with only slight involvement with water harvesting/aquaculture ponds. Now, CRS field offices in India, Morocco, Costa Rica, and Panama intend to continue their water harvesting and/or aquaculture efforts after WHAP comes to an end. HPI had just approved a budget for an aquaculture component in the Java, Indonesia program when they decided to participate in WHAP in 1984. Because of WHAP, aquaculture development is now an important component of HPI's programmatic work in many areas, currently included in three field projects. Specialized staff persons were hired by HPI explicitly to manage the aquaculture demonstration and training programs in Indonesia, Thailand and Sierra Leone. Similarly, SCF intends to continue the development of at least four water harvesting/aquaculture programs begun during WHAP. The future of the CARE/Guatemala integrated agri/aquaculture program is unclear. By contrast, the technology was completely new to CWS and LWR. LWR works at the request of local organizations, has received the least benefits from the project, and indicates the least interest in promoting the technology. CWS is undergoing restructuring and is unsure of future programming priorities.

##### **B. Evidence of Collaboration**

All project participants hosted at least one meeting and had perfect attendance at eight meetings out of the fourteen Advisory Council meetings held over the life of the project. This is an excellent sign of commitment to the concept of collaborative management. The PVO/University Center handled day-to-day project maintenance and staffed the Council enabling the Council to serve in the role intended: it made major project policy decisions. Also, all participating PVOs hosted at least one joint training session except LWR. Lastly, four PVOs participated directly in this internal evaluation. One council representative stated, in response to a question about WHAP's management structure, that:

"The collaborative management structure used under WHAP has been quite effective. One of its positive features is that it assures effective provision of technical assistance and training to the field and effective management and required reporting of project activities to A.I.D. while allowing each PVO in the WHAP group to maintain their own funding and implementation systems of WHAP-related activities. Another positive feature is that this collaborative system has provided an opportunity to share experiences and ideas across the PVOs and university staffs on not only water harvesting and aquaculture, but on development approaches and management as well. Further, this structure is successful from [our] point of view because it utilizes our organization where it is strongest. Namely, the field level

implementation and oversight of projects. As we do not have much of the technical expertise in-house for doing water harvesting and aquaculture projects, it is good to have Auburn handling this area. Further, having the PVO/University Center to handle the administrative aspects of the project makes it much more attractive."

Many interdependencies were built into WHAP's design. The PVO/University Center was dependent on the field projects themselves and the ICA for most documentation information. The ICA was dependent on PVO field staff to monitor and support projects properly. PVO field staff depended on individual farmers to responsibly maintain whatever ponds were initiated. The PVO/University Center relied on the Advisory Council to maintain communications with their respective networks. At times, these indirect links proved difficult; on the other hand, it meant projects were being nurtured at a variety of levels. If one level failed, possibly others could compensate. Most importantly, each involvement was voluntary. At every level, participation was by choice. Nobody got involved unless they thought the technology and the project were valuable. WHAP evolved into a multi-tiered collaborating structure.

## **C. Project Inputs and Outputs**

### **1. Inputs:**

Over the life of the project, 51 field projects in 29 countries were visited for a total of 107 visits either for programming, technical assistance, or evaluation purposes. This assistance, added to thirteen WHAP trainings in nine countries, required 1,115 person days at a total estimated dollar value to the PVOs of \$334,500 (@ \$300/day) applied directly to PVO projects in the field. These figures do not include preparation time prior to the visit nor reporting time following the visit. Additionally nine field projects received support grants for a total of \$98,635. WHAP expenditures over the life of the project totalled \$1,435,877. Of that amount, \$909,544, or 63%, went directly to support field projects, while the remaining 37% funded project support and management activities in the U.S.

### **2. Outputs:**

At least eighteen water harvesting/aquaculture field projects, most with multiple sites, were established as a result of WHAP, while 33 others received feasibility studies or short-term assistance. This surpasses the original nine field projects with 27 sites projected. One hundred and sixty-four persons representing forty countries were trained directly by WHAP in thirteen trainings, six of which were regional. At least 4,149 other women and men were trained indirectly by the PVOs themselves. At least 1516 water harvesting ponds were constructed or improved due directly to WHAP involvement. These ponds and training benefitted over 30,500 individuals comprising families and villages of men, women, and children. Small livestock were raised in close proximity to the ponds, unknown hectares of garden vegetables were irrigated, and the total annual fish production for just the CARE/Guatemala project, at its closing in 1989, was 45 tons. Eleven technical manuals were produced explicitly for use by PVO staff of which over 1200 copies have been distributed in the field. Most difficult to measure of all, networking with in-country resources took place as a standard component of each visit by a WHAP consultant.

## **D. Expense of Field Projects to Farmers, to PVOs, and to WHAP**

All evaluation reports indicate that subsistence farmers were able to afford pond construction costs either with a small loan from the PVO or a local bank (in the case of Nepal) or with no financial assistance. Upkeep costs, too, have proven to be within the means of small farmers. Program costs to PVOs vary. Some projects, such as CARE/Guatemala, had large budgets for implementation of water harvesting/aquaculture activities while others used the technology simply

as a complement to existing programming priorities, hence, with a limited budget. As for the total cost of WHAP itself, that breakdown follows

### END OF PROJECT FINANCIAL REPORT

<u>COST ELEMENT</u>	<u>EXPENDITURES</u>
Administrative Direction and Support	\$345,389
Program Development	30,738
Technical Assistance/Training (non ICA subcontract)	48,105
Evaluation	90,264
Documentation/Information	89,375
Subcontract (ICA)	352,454
Project Support Grants	98,635
<u>Indirect Costs</u>	<u>180,944</u>
<b>TOTAL</b>	<b>\$1,435,877</b>

## V. REMAINDER OF REPORT

In the second section of this report, we have included copies of the actual evaluation documents received from the six participating field projects. Each report is prefaced with a monitoring summary of inputs and outputs. The third section summarizes responses to the management questionnaire circulated to the Advisory Council.

## VI. CONCLUSIONS

The Water Harvesting/Aquaculture Project was destined to be a pioneer in several ways. A university was retained on a long-term basis to supply specific technical expertise to PVO operations already in place. It was proactive in that PVO headquarters staff were educated on the potential of the technology at the beginning of the project through training sessions in order to include it in future field programming. And, major decision making was in the hands of the project participants through a working advisory council which met as needed.

Based on the reports contained in sections two and three of this report, and information gathered over the life of the project, we must ask the following questions to draw conclusions. The first four questions were included as goals of the final evaluation in the scope of work.

1. *Of what value is the introduction of water harvesting and integrated agri/aquaculture to PVOs?* From the reception demonstrated by the field projects participating in this evaluation, the PVOs believe it to be very worthwhile at the subsistence farmer levels in terms of its nutritional implications and, in many cases, income-producing potential. It is a relatively new sector for them and they generally agree that additional training would be useful. In all six projects, nonetheless, hard data indicates that the technology can be applied to a diverse range of environments with a wide variety of expertise both on the part of PVO staff and that of the beneficiary population. These projects indicate that technology transfer (i.e. trial and acceptance of technology by participant population) is achievable in just two to three years with proper monitoring and guidance.

2. *Of what value is this technology to the intended beneficiaries?* In most cases, the PVO's goal was to increase water availability and protein consumption. The PVOs' observations are that if a farmer constructs a pond and raises fish, his family consumes at least a portion of that fish and other products, such as chickens, ducks, or vegetables which may be associated. Any products

marketed produce income for other financial needs and, possibly, improved diets. Previously, fish were either not available or too expensive for most people to purchase regularly. In almost every case, studies were conducted to determine whether (integrated) aquaculture was the most lucrative use of land in each situation. Participating farmers report most of the time, that fish are more profitable than corn or rice. In some cases, ponds were constructed on land that was otherwise non-productive. Many projects tended to be in remote areas where employment was very scarce. The fish ponds often provided a means for the father of the household to remain at home rather than leaving in search of work.

3. *Of what value is the collaborative management methodology to the participating university and six PVOs?* It is debatable that WHAP would have had as significant an impact as it did were the PVOs and university not involved in its actual management. This style made each participant also an "owner" with a stake in the project's outcome. The added communication dimension (fourteen advisory council meetings over the life of the project along with untold correspondence and telephone calls) also increased opportunities for sharing resources as was done in regional trainings attended and/or sponsored by multiple PVOs. Technical visits, too, were almost always made to multiple PVOs within a region or country allowing for more efficient use of funds. We believe this networking would not have taken place if this group were not in such close contact making them aware of added opportunities. The project finale, a self-evaluation, has resulted in HPI/Thailand and SCF/Thailand arranging an exchange visit to view one another's projects. CARE/Guatemala's project was considered so exemplary, that the project manager assisted in a WHAP consultancy to SCF/Bolivia. Not only does this management mode afford obvious networking possibilities, it gives the university consultants a broadened view of subsistence level aquaculture from which to draw experience and models.

4. *Is future funding to the PVO/University Center for projects with other strategies and additional technologies justified?* WHAP seems to have fulfilled its role as the scout for future collaborative projects between universities and PVOs. The PVO/University Center also established its function as facilitator through WHAP. With the best interests of the overall project at heart, it was able to be an impartial facilitator and mediator intercepting and interpreting messages being transmitted from a multitude of directions.

In the words of two advisory council members in response to questions four and five of the management questionnaire:

"[The Center played] a critical role. They provided the staff expertise to manage what could have been an unproductive gathering of separate PVOs and universities, seeming to be ready to cooperate, but needing careful stroking, guidance, encouragement, and from time to time, read the riot act. They gave A.I.D. a high value product for a low cost."

"The advantages of having the Center facilitate and administer the program are two-fold: Having a third body conduct these essential tasks ensured that Auburn's services would be provided to a number of PVOs. Having a third body to conduct the administrative and reporting functions to A.I.D. allowed each PVO to maintain their diverse management systems and not have to adopt special systems for the WHAP activities only. Further, it allowed A.I.D. to have only one point of contact for the grant rather than one for each PVO."

5. *Is the flexibility demonstrated in WHAP conducive and/or essential to this type of project's success?* Since WHAP's objective was to foster the design and implementation of a series of PVO field projects in a variety of countries and rural settings, the flexibility was essential to project success. In some ways the approach was "shotgunned," unbound by geography, staff capability,

or project size. WHAP recognized that initial exposure to a technology is essential before trial and adoption occur. The move to these later stages can be very slow and may take a decade or more. The odds of the technology being accepted immediately were very low, as Auburn knew when it approached the PVO/University Center to develop a project with PVOs as project implementers. In retrospect, the philosophy was to give anyone interested an opportunity to learn more; if really interested, to have a feasibility study; if the study was positive, to train staff; if the staff was ready, to construct ponds, etc. A more limited, narrow approach would not have uncovered nearly the same interest among the PVO community and the number of beneficiaries would likely have been greatly reduced. Being unfettered by field project expectations left WHAP free to be creative and willing to improvise. We believe this attitude served to make WHAP receptive, and the field projects self-directed. Consequently, there was no generic field project, but rather a series of projects well tailored to family and community needs.

6. *Is collaborative self-evaluation feasible and worthwhile?* Collaborative internal evaluation is both feasible and worthwhile. However, WHAP's assumption that the PVOs could use their "own evaluation methodologies" was unrealistic. The process would have benefitted from more planning and guidance. Individuals who did not necessarily have any previous experience with evaluation were asked to lead evaluations. Although, all of them felt the experience was worthwhile, many expressed frustration with the lack of specific instructions. Self-evaluation merits much more investigation and should be developed with assistance from experts within the Center network.

7. *Would these PVOs have tried aquaculture or water harvesting without WHAP?* Discussions with the Advisory Council indicate that it is unlikely that most PVOs would have felt confident enough to attempt water harvesting and/or aquaculture without the security of technical backup and training. Furthermore, before WHAP involvement, hardly any PVO staff were aware of, or understood, the technology.

8. *What mode of technology transfer was used for this project and how effective was it?* WHAP addressed the issue of headquarters' lack of awareness of the technology immediately by providing introductory trainings at Auburn for them. Once informed, those staff persons contacted field personnel to solicit interest in regional introductory trainings. Trainees were provided questionnaires which asked them whether they would like to have a programming visit to assess interest at the local level. If there was interest, consultants returned for feasibility studies and to locate in-country technical resources. In almost every case, our documentation shows that field projects began as a result of some PVO staff or counterpart having attended a regional training. During each visit, consultants communicated with local resource persons whenever possible. They made recommendations on every aspect of implementation from: staffing needs, to fingerling suppliers, to pond construction, to pond management. It was an all-purpose approach to technical support. When the pieces fit, a vital water harvesting and/or aquaculture project resulted; when something was missing, such as long-term, committed staff, projects never got off the ground.

9. There are many indicators of sustainability. A few measures of sustainability follow: *Are these practices which create more productive potential and use fewer inputs (economically, environmentally, socially, and nutritionally)? Was local organization for project support established and focused? Were local people trained?* The technology applied promotes environmentally regenerative actions. The only possible criticism is that it might take animal manures that would otherwise have been used on fields. However, since this manure is still used to produce food, its optimal use must be considered. It uses no pesticides or toxic substances which might damage the environment. It harvests water that might otherwise flood or erode the environment. It has proven to be within the means of most subsistence farmers and evidence suggests it usually pays for itself within a few years. The social impact is as yet unknown, however, it appears to have a positive impact. Fish offers a fine source of protein and generally contributes to a better diet in developing countries where protein is usually difficult to come by. In

almost every case, an existing local committee accepted the responsibility for pond management. Otherwise, a new committee was formed. They took the form of cooperatives, women's groups, or simply pond management committees--at least 131 such committees are on record. The point of training PVO staff was to prepare them to train pond owners or community pond owners. Over 4000 beneficiaries were trained on site by the PVOs. Training was an integral part of the project; many WHAP consultancies included short, site-specific trainings. Furthermore, the ICA international network of alumni is currently being strengthened; they offer a very valuable resource for sustainability.

Based on trip reports made by consultants, at each potential site, preliminary assessments were made to determine local interest in fish as an addition to diet, the minimal and optimal environmental conditions necessary for success, and local technical support available. If conditions were unsuitable, the consultants advised against a WHIAA activity. This kind of initial screening is the first and most important step in building for project sustainability.

## **VII. THE FUTURE OF WHAP PROJECTS?**

What will happen to these projects after WHAP's conclusion is not clear at this point. We are hopeful that when these PVOs need aquaculture/water harvesting advice which is not available locally in the future, they will contact the ICA directly. A relationship between them has certainly been established by now as evidenced by a project currently being developed between HPI and Auburn.

Ideally, the six projects which participated in the evaluation (or others) will have a follow-up evaluation in three to five years. We plan to maintain contact with these projects and to ask them to share reports to their headquarters with us on a voluntary basis. These types of tracking are essential if WHAP is to report definitively on its impact and sustainability.

## **SECTION TWO: FIELD PROJECT EVALUATIONS**

*Format for each evaluation:*

- A. Name and title of evaluator*
- B. Summary of monitoring information submitted to projects for verification*
- C. Field Project Report*

### **PROJECTS:**

**CARE/Guatemala**

**HPI/Sierra Leone**

**HPI/Thailand**

**SCF/Belivia**

**SCF/Bangladesh**

**SCF/Nepal**

## Questionnaire Used in Field Project Evaluation of WHAP

*The Water Harvesting/Aquaculture Project is currently undergoing final evaluation. As part of evaluation, selected projects which have received WHAP assistance will be reviewed to assess WHAP's impact. How the evaluation is conducted is entirely at the discretion of the participating PVOs. Please include following questions in evaluation:*

### **a) Utility of Technical Assistance to PVOs and Villagers**

- What evidence is there that technical assistance and training provided through WHAP is directly useful - for example, is the assistance oriented to practical needs of [PVO] field staff and counterparts; are types of interventions suggested by technical advisors feasible in light of budgets and technical capabilities; and are these interventions adapted to or consistent with social and cultural systems of client communities with which you work?
- What evidence is there that WHAP strategies have benefitted target population, and that benefits from interventions will be realized equitably across the community (e.g., men and women both benefit from and contribute to activity)?

### **b) Monitoring Methods**

- How practical is three-page progress reporting system (enclosed) disseminated in 1988 --how well does methodology work, is system responsive to needs and capabilities of those who are supposed to use it, and what alternative approaches might be preferable?

### **c) Sustainability of Intervention**

- What evidence is there that water harvesting and/or aquaculture activities will continue once WHAP concludes? Once PVO leaves?

### **d) Economic Benefit Rate of Return**

- How many people were impacted by this pond project and what impact did it have on their food security?
- What economic value, if any, has been derived from this pond project by the beneficiaries?
- What did the beneficiaries have to spend to become involved in this pond project, and afterwards, to sustain it?

## **CARE/Guatemala**

### **Evaluators:**

**Ms. Silvana Castillo, M.S., Chief of Aquaculture Project, CARE/Guatemala  
(Auburn University Alumna)**

**Mr. Thomas Edwards, Director, Latin America Programs, Lutheran World Relief  
(LWR WHAP Advisory Council Representative)**

Summary of WH/AP Information Collected on CARE/Guatemala Project  
(Through July 1989)

**DIRECT WH/AP CONTRIBUTIONS**

**FUNDING SUPPORT**

No financial support has been provided to this project by WH/AP.

**TRAINING SUPPORT**

Of persons associated with project, Ms. Corinne Pingel Seltz, former Assistant Country Director and Project Manager attended February 1985 regional training in Panama and Ms. Virginia Ubik, former Country Director attended June 1983 training at Auburn University.

**TECHNICAL CONSULTATIONS**

Five technical visits have been made: Jan. 89, Aug. 88 (Duncan), May 87 (Phelps), Nov. 86 (Phelps and Hatch), Mar. 85 (Duncan and Smitherman). After this evaluation was conducted, a sixth visit was made : July 89 (Popma and Bocek).

**PROJECT DEVELOPMENT**

**HISTORY**

The Family Fish Pond Extension Project began in 1983. Upon its completion, the Integrated Aquaculture Extension (IAE) project (1986-1989) began which combines aquaculture with small animal production and diversification, emphasizing integrated pond culture. Both projects are direct result of training and technical assistance visits provided by WH/AP.

**BENEFICIARIES**

Approximately 1000 families are participating. At close of project, the total number of beneficiaries was more than 9000.

**POND CONSTRUCTION**

All ponds are family owned ponds of an average size of 150 m<sup>2</sup>. By close of the IAE, the number of participating ponds surpassed 800, more than 600 of which were constructed during the life of project.

**TRAINING**

Informal training takes place at virtually all ponds and occurred at two levels: extension agents and field supervisors (i.e. training trainers), and families. Training activities included those organized by the program at central and regional levels, as well as those activities organized by extensionists in their communities. By close of project, there were 29 "promoters". Over the life of the IAE project, 979 person days had been spent in formal training of Peace Corps volunteers and DIGESEPE "promoters." Producers were provided 5,471 days of training over the three-year IAE project.

**FISH PRODUCTION**

By close of project, average annual production of aquacultural produce per participant family was 124 pounds.

**INTEGRATION**

By close of project, 36% (293 ponds) of the ponds were integrated with animals ( goats, pigs, rabbits, and chickens), or with gardening

**EXTENSION**

Extensionists made 16,064 visits to producers over the life of the IAE project.

**ORGANIZATIONAL EFFORTS**

Two cooperatives interact with the project: (1) Quetzaltepeque includes group of fish farmers and area farmers who produce and market agricultural products --30 male and 5 female members; (2) Salama is a pre-existing women's marketing cooperative which has enlarged to include fish/chicken farmers who now sell through the coop--10 male and 30 female members. Informal groups, one producer association was established in FY87, and two were established in FY88.

**PROJECT COST**

The Integrated Aquaculture Extension Program received support from USAID/Guatemala for the period FY 1986-1989 through an Operational Program Grant. Total AID commitments were US\$500,000. During that period, the host country agency, DIGESEPE pledged \$60,000 to CARE, and CARE matched with \$75,000. The combined budget over the three year period was therefore \$635,000 (not including the in-kind contribution by the Peace Corps).

**REPORT ON WHAP SUPPORT OF CARE GUATEMALA  
FAMILY FISH POND EXTENSION PROGRAMS**

**I. PURPOSE AND METHODOLOGY**

This assessment was part of a final evaluation of the Water Harvesting/Aquaculture Project (WHAP) being carried out during the final year of a five year project. Two types of evaluations for the WHAP were planned, interviews by Advisory Council members of headquarters and field staff and assessments of field projects. This assessment was directed at one of the field projects, The Family Fish Pond Extension Program implemented by CARE/DIGESEPE/Peace Corps in Guatemala.

The specific objective of this evaluation was to determine the impact of the WHAP Project on CARE's Guatemala Family Fish Pond Extension Programs. The evaluation of WHAP was planned and is being implemented by the organizations participating in this project. The participatory method was employed for two reasons. First, to further one of the key concepts of the project, collaborative participation by members of the WHAP consortium. Second, because funds for evaluation were not available for this stage of the project, the method allowed participating agencies and the Center for PVO/University Collaboration in Development, to absorb evaluation costs. A representative of Lutheran World Relief (LWR) was selected to participate with CARE staff in the assessment of the CARE program. Although LWR had no WHAP-assisted project in Guatemala, he was interested in contributing to the assessment process itself and in becoming more familiar with water harvesting/aquaculture projects and WHAP's activities.

No standard procedure was established for evaluating the different field projects and it was expected that the teams would devise procedures relevant to the particular situation. The only evaluation materials provided by the PVO/University Center were summaries of monitoring information for this project. Information about WHAP contributions to the project was also supplied by the CARE project manager. Background information about the program was obtained from the AID-sponsored evaluation of the program by Bertrand and Olsen.

A. Issues/Aspects

Given the short time allotted for this assignment, it was decided that the assessment would be based on the four issues/aspects listed in Article VII of the Scope of Work. Using these questions as guidelines, interviews were held with persons directly involved in different aspects and at different levels of the program. A list of those interviewed appears as Annex A.

The four guideline questions are listed below.

1. Utility of technical assistance to PVOs and villagers.

- Where interventions recommended by WHAP technicians

feasible, appropriate and ultimately useful to beneficiaries?

- Were benefits shared equally by female and male project participants?

## 2. Monitoring methods.

- How practical and useful is the progress reporting system devised by WHAP for monitoring progress of the different projects?

## 3. Sustainability of intervention.

- What evidence is there that water harvesting and/or aquaculture activities will continue once WHAP concludes? When CARE leaves?

## 4. Economic benefit/rate of return.

-Number of people impacted; impact on food security; economic value; start up and maintenance costs, etc.

## B. Area of Coverage

Interviews and site visits were made to projects in Region II in the departments of Alta Verapaz and Baja Verapaz. This region was selected because it contained a variety of pond sites with different physical characteristics and socioeconomic factors. The visit also coincided with a monthly meeting of the three parties implementing the project.

## C. Major Activities

The LWR representative and the CARE project manager met the first evening to discuss the assessment's objectives and to plan the best way to carry out the assignment. The next day was spent traveling to Region II and visiting different ponds. At most ponds, interviews were held with the owners of the pond. The LWR representative and the CARE project manager were accompanied by the CARE regional coordinator and a local promoter. The following day was spent in the monthly meeting of the Region II aquaculture project team and visiting several more ponds. These visits provided ample opportunity for interviews and for seeing different types of pond management. The following day the LWR representative interviewed the AID person responsible for monitoring the program and talked at length with the CARE project manager to cross check information and compare impressions.

## **II. PROGRAM BACKGROUND**

CARE/DIGESEPE/Peace Corps have been working in fish culture in Guatemala since 1982. The Family Fish Pond Extension Program was established to address proteic needs of rural families. After four years of its implementation, the Integrated Aquaculture and Extension Program (IAE) which has dietary as well as income

objectives followed. The IAE Program is based on the integration of the fish pond with other farm activities and it is expected that CARE will phase over on September 1989. For the purpose of this document, both programs will be referred as one, the Family Fish Pond Extension Program (FFP).

The program is being conducted by three agencies: CARE, DIGESEPE (Ministry of Agriculture) and Peace Corps. CARE's role is principally administrative, providing technical assistance and training, monitoring project's progress, materials and extension support and coordinating activities among agencies involved. Peace Corps has provided volunteers that are responsible for training local promoters and developing fish culture at the community level. The program began with 7 volunteers in 1982 and has grown to 23 by the time of the assessment. DIGESEPE provides both technical and logistical support to the project, as well as salaries for the promoters and field staff. A total of 32 promoters have been hired by DIGESEPE who represent the core of the extension service of the program.

Funding of the programs have come from different sources; cash contributions by USAID through OPG grant, CARE New York and DIGESEPE, and in kind contributions by Peace Corps and DIGESEPE.

The program is working in 26 communities that present a variety of climatic and social conditions. Close to 1000 ponds have been built in sizes varying from 100 to 200 sq meters.

### III. FINDINGS

#### A. Utility of Technical Assistance

All pond owners interviewed said that they harvested fish which they had either sold or eaten. The assessment was held soon after Holy Week, a period when special meals are prepared. All farmers who had harvested fish during that period were able to sell all the fish they had harvested. Those farmers and promoters who have been able to breed fish have been able to sell all the fingerlings produced.

The CARE/DIGESEPE/Peace Corps Program is addressing the interests and needs of women through a recently funded Women in Development Pilot Project (WID). The WID links the agroforestry program with the fish culture program in order to provide a broader range of activities. Currently involvement of women in fish culture program varies. A promoter interviewed said that his wife is in charge of feeding the fish and some general maintenance of the pond. However, he is responsible for the more technical aspects such as breeding and stocking. Another woman responded that her husband was in charge of all fish culture activities. According to CARE's monitoring system, women are responsible for the management of fish ponds and men are responsible for the construction and stocking of ponds, and the entire family participates in the harvesting and marketing of fish.

## B. Monitoring

This point referred to the three-page reporting system developed by the PVO/University Center for monitoring the different projects of the PVOs included in the WHAP. The FFP project manager observed that the forms were easy to complete as they requested information that was regularly collected and analyzed for the FFP project. However, the information requested by the WHAP system was too aggregate and general to be of much use to the FFP project. The forms could not capture the complexity and variety of the CARE aquaculture program. There was no expectation that it be used by CARE; it was understood that the information collected was for WHAP's purposes.

The WHAP monitoring system could be of possible use to the aquaculture program of individual PVOs if comparative analysis of data could be done on a level that would allow the PVOs to compare experiences. However, given the diversity within just the CARE/Guatemala program, which includes over 1000 ponds in a variety of environmental, social, and cultural settings, comparisons of experiences among projects in different countries may not be possible. Still, if one purpose of the WHAP monitoring system was to produce information useful to the PVOs implementing projects, an effort should be made to modify the system.

## C. Sustainability of Intervention

This point addresses the possibility of project sustainability from two points of view; one, without the participation of WHAP in the project and two, without the participation of CARE in the project.

### C.1. Without WHAP's Presence

It can be concluded with a high level of assurance that the FFP Program would continue without the assistance of WHAP. The FFP Program has reached a level of performance and has created a certain amount of momentum that would enable it to continue without additional external technical assistance. WHAP provided technical assistance to CARE which reinforced overall project management and evaluation. It can be said to WHAP's credit that it has provided assistance that was appropriate, effective, and delivered in a manner that did not encourage dependency. An important consideration for future activities of WHAP would be to determine which elements of this approach were most effective.

It is important to note that CARE's project manager intends to maintain in contact with ICA and WHAP to assist the project in integrated aquaculture and development matters. Under the current arrangement she occasionally calls ICA representatives to request advice on specific problems. She thought this would be continued. Also, the proposal currently under consideration by USAID includes a line item for technical assistance. Some of that assistance would probably come from ICA or other WHAP related institutions.

## C.2. Without CARE's Presence

Sustainability without CARE's presence is an issue that would have to be evaluated 4-5 years from now. The ultimate stage of sustainability for the project would be for it to enable individual farmers to maintain economically feasible fish production in their ponds with minimal assistance. Two critical requirements would be: 1) they produce, or be able to obtain the basic resources required to carry out fish production--in this case, fingerlings and food, and; 2) they have access to technical assistance they may need. At this point, about 60-75% of the farmers are capable of successfully producing their own fingerlings and most of the ponds are fed with locally available resources. The technical assistance developed by the project has shortcomings and the extent to which it will affect the future of the program cannot be determined at this moment. There are two sources of technical assistance being provided, DIGESEPE-employed local promoters and Peace Corps Volunteers. Both have strengths and weaknesses; the latter should be corrected before they can provide consistent, sustained support for the project. Unfortunately, at this time some regions of DIGESEPE do not place high priority on the fish production program. Accordingly, it does not provide sufficient funding for infrastructure, maintenance or personnel.

In the view of the evaluator, the introduction of new techniques could continue to improve the project by providing more alternatives to those farmers who have already mastered the basic techniques. This would not be possible if CARE phases out. However, some observations indicate that the program would continue, albeit at a slower pace and with more setbacks, without the support from CARE. CARE's implementation strategy has been towards the sustainability of the program at the promotor and farmer level. Some of the positive indicators of the program's capacity to continue are:

- demand for pond continues;
- promoters, trained through the program have successfully trained farmers in the basics required to manage a fish pond using integrated techniques;
- promoters are adapting fish farming techniques on their own and learning more complex techniques such as breeding carp;
- fingerlings are being produced by individual farmers and sold to other farmers to stock ponds; this produces income for producers and a local supply for buyers thus decreasing dependency on the government-operated fish stations;
- most of the farmers in the program have learned the basic skills required to manage their ponds. More experienced fish farmers are beginning to learn more complex techniques such as, separating of fish by sex.
- CARE has produced manuals in Spanish and Kekchi (Mayan language) that explain the basic resources and techniques required to construct and maintain a pond for fish

production and integrated animal raising. Extension material for the training of promoters has also been designed and published by CARE.

#### D. Economic Benefit/Rate of Return

There have been approximately 6,500 direct beneficiaries of the CARE Family Fish Pond Program. There is strong evidence that the increased consumption of fish has improved the diet of all participants. This is based on reports from the promoters of estimates of the amount of fish participants eat, and the fact that prior to the introduction of fish ponds, little or no fish were eaten by the participants. In areas of project sites, fish either were not available or too expensive for most people to purchase regularly. Exact measurement of nutritional improvement was not feasible because of the high cost and complexity of techniques required to get accurate data.

Expenses for establishing and maintaining ponds vary; labor for digging the pond being the major start up cost. Some factors that influence these costs are the location and size of the pond, the type of soil, and the distance and type of water supply. Maintenance costs include the restocking of ponds, if farmers do not reproduce their own, and rarely, the purchase of grains for supplementary feeds. Food costs are minimal as most of farmers use locally grown vegetation and manures from animals.

#### IV. SUPPORT PROVIDED BY WHAP

All support provided by WHAP to the Family Fish Pond Extension Program was directed to CARE being the agency responsible for technical assistance, project management and evaluation.

##### 1. Training of CARE staff

-In June 1983, CARE's Country Director attended a Training Course at Auburn.

-On Feb 1985, CARE's Project Manager attended a Training Course in Panama. This contact with ICA technicians and the integrated aquaculture/agriculture method led to an ongoing relationship throughout the project and adoption of the integrated method proposed by WHAP in the Guatemala aquaculture program.

##### 2. Assessments/Evaluations of the Program

-Assessment of the main aspects of the Family Fish Ponds Extension Program. The WHAP team answered critical questions for the implementation of the program.

-Mid term evaluation of the performance of the IAE program. The current IAE project manager considers the recommendations from these evaluation report to have provided guidance for many of the basic activities of the IAE program.

### 3. Technical Assistance

-Improved monitoring of ponds. ICA team provide technical assistance in the design of a monitoring system to determine pond productivity and profitability. WHAP-ICA also provided the software for calculating diets for small animals and fish.

-Improved of extension packages. ICA team designed field experiments that supported extension recommendations and assisted in the data analysis. These field experiments represented graduating theses for two university students.

-Technical assistance visits. Made to the CARE project by WHAP-ICA technicians to assess progress, visit sites and address specific problems. The most recent visit was by Bryan Duncan, who revised the draft project proposal for an expansion of the on going program. Ron Phelps from ICA provided a follow on on recommendations from mid term evaluation on May 87. Visits were considered valuable and applicable as they responded to specific needs expressed by CARE personnel.

-Technical Information. Technical books and printed material have been obtained by CARE through WHAP-ICA. Particularly helpful has been a series on aquaculture printed in Spanish. The series has been distributed to DIGESEPE regional offices.

-Improved fingerlings. Fingerlings of tilapia and carp were supplied to the FFP Program by ICA. A cold resistant tilapia available at the Fisheries Station, Auburn University, was provided to use in the colder regions of the country. Tilapia commonly used in other areas of Guatemala were growing too slowly in the colder water. Initial results of this cold resistant tilapia in farmer's ponds are promising. Fingerlings of Israeli carp which grow faster than the common carp raised in Guatemala were also provided through the WHAP.

## **V. ADDITIONAL COMMENTS--COLLABORATIVE EVALUATION**

A secondary purpose of this assessment was to experiment with a collaborative methodology calling for personnel associated with WHAP to act as evaluators rather than contracting external evaluators. This methodology has promise for cross-fertilization of ideas and is less expensive for WHAP and for PVOs. However, to be effective, this collaborative method will need more work. Below are some observations on this method as it was used with the CARE program.

### A. Time available for the assessment

Time was too limited. The four days allocated for the evaluation, including travel, was unrealistic. The trip each way between New York and Guatemala requires a full day of travel. This would have left only two days for carrying out activities for the assessment. An additional day was included which provided time to see several aquaculture project sites.

## B. Preparation

The LWR participant also found that it was difficult to prepare for and carry out the study as an additional activity on top of his regular work load. He did not limit the scope of work sufficiently or soon enough. Also, he felt that he had not read enough background material on the program prior to the beginning of the assessment.

## C. Background Material

Insufficient materials were provided. The PVO/University Center compiled and provided summaries of monitoring information relevant to projects to be evaluated. However, these were of limited use as baseline or benchmark data with which to assess WHAP activities. To supplement this, the CARE representative provided a list of the WHAP activities of which she was aware.

The only other documentation received by the evaluators was the AID-funded report of the External Evaluation Team on the WHAP. This provided valuable background information on the overall WHAP program and on the CARE program. Additional background information would have been helpful.

## **HPI/Sierra Leone**

**Evaluator:**

**Mr. David Reside, M.Aq., Project Director (Near East Foundation and Auburn University Alumnus)**

## Summary of WHAP Information Collected on HPI/Sierra Leone Project (Through January 1989)

### PROJECT HISTORY

The "Aquaculture Training Program" was undertaken by joint agreement in 1988 among the United Christian Council of Sierra Leone, Heifer Project International, and the Near East Foundation.

### WHAP FUNDING SUPPORT

No financial support has been provided to this project by WHAP.

### WHAP TRAINING SUPPORT

Mr. Frank Anthony, SAIDAC Director, and Mr. Frederick Johnnie, KCDP Project Manager, attended WHAP Regional Training in Cameroon in 1986.

#### Impact of WHAP Training

Upon Anthony's return from training, a trial fish pond was constructed at SAIDAC and 3 growout and nursery ponds were constructed later.

Upon Johnnie's return from training, 3 ponds were built at KCDP and 2 ponds were built by villagers at nearby Giame which receives extension services from KCDP.

### WHAP TECHNICAL CONSULTATIONS

Two technical visits have been made: Mar. 87, 6 days (Duncan) and May 88, 10 days (Popma).

#### Impact of Duncan's Visit

When Duncan visited Bo Teacher's College, he found 9 ponds which were being managed by a Peace Corps Volunteer who sold the fish at a low rate to college students. The ponds were harvested on a rotating basis so that one pond was harvested every two months. Records indicated production rates of 280 to 400 g/m<sup>2</sup> in about 5 months with individual fish averaging about 70 grams. He recommended that this facility be developed into a training center for agricultural extension technicians. Duncan visited SAIDAC and recommended that it, too, be used as an aquaculture training facility. Duncan visited the Kailahun Community Development Project and noted the intention to integrate fish production with pig and duck husbandry there. He did not feel that the Methodist Training Center at Jaluahun held much potential for fish pond development and made recommendations for better management of the ponds at the Boy's Society Regent Farms. He outlined a year-long program recommending that the UCC/HPI project focus on intensive training of agricultural extension technicians. He felt the training should be centered at Bo Teacher's College and that its success would lie in having a qualified aquaculture specialist run the project and conduct the training. (Because of that recommendation, David Reside was later hired.) Duncan emphasized the necessity of training a Sierra Leonian to sustain the effort and proposed a production/ management scheme for the areas visited.

#### Impact of Popma's Visit

Popma reiterated the suitability of Bo Teacher's College and SAIDAC for use as demonstration centers and added seed production to Bo's functions. He also stressed the importance of these facilities being operational before an extension and training effort be emphasized. He advised conducting a systematic survey to determine why existing ponds were abandoned (well over 90% in many regions) with the help of the Peace Corps. Until the causes of the failures were identified, Popma felt an extension effort would not be very productive. He suggested completing the survey and upgrading facilities in time to begin a training program in late 1988 for Bo and SAIDAC students. By early 1989, he felt fish farming extensionists could probably begin training. Reside subsequently produced a proposal which incorporated Popma's recommendations. Popma concurred with Reside's assessment that a nearby German aquaculture project practiced poor management techniques and would not be a beneficial resource.

Reside was hired as an aquaculture consultant by the Near East Foundation and arrived in Sierra Leone in February 1988. His proposal for a training program is dated July 4, 1988. In this proposal Reside explains that aquaculture is a relatively new technology for the country as a whole. The desired outputs of his 2-year term follow:

1. Analysis of principal cultural factors affecting adoption of aquaculture by Sierra Leone farmers;
2. Site development:
  - 20 ponds constructed or improved at Bo Teacher's College and SAIDAC
  - 12 ponds constructed at UCC affiliate sites;
3. Field tested production systems in place at Bo Teacher's College and SAIDAC;
4. Training: 200 students at Bo Teacher's College, 100 students at SAIDAC, 10 UCC technicians.

### PARTICIPATING ORGANIZATIONS

1. Near East Foundation: salary of aquaculture specialist and some project financing

2. Heifer Project International: Project financing
3. United Christian Council: Administrative assistance
4. Ministry of Agriculture and Natural Resources/Peace Corps/GTZ (A German development group): Data collection from farmers
5. Bo Teacher's College: Classroom and production facilities and on-site labor
6. Southern Agro-Industrial Development Associates Centre: Classroom and production facilities and on-site labor

April 1989

Final Evaluation of Water Harvesting/Aquaculture Project's  
Impact on the Aquaculture Training Program for Sierra Leone

a) Utility of technical assistance to PVO's and villagers.

Technical assistance and training provided through WHAP has resulted directly in the construction of three ponds at the SAIDAC site in Bo and 3 ponds at the KCDP site in Kailahun. More importantly the assistance and training have resulted in a growing interest and participation in the farming of fish on the part of villagers in the area of these sites. The Kailahun site is especially illuminating in this respect as what was once an area with no participation by villagers in the field of fish farming has now become a major center of interest. This interest has resulted in the placement of two Peace Corps Volunteers serving as fish farming extension agents in the immediate area. The Kailahun site serves as a major supplier of fingerlings to fish farmers in the area while the SAIDAC site uses its' ponds for training of their students.

Technical assistance through two consultant visits have proven useful by first having set the stage for the development of the Aquaculture Training Program during Dr. Bryan Duncan's visit and secondly through the direction provided by Dr. Thomas Popma to the on-site aquaculture consultant David Reside in establishing the project goals and implementation schedule. Overall this assistance has proven to be appropriate and practical to the conditions found in Sierra Leone at the time of their visits.

The Aquaculture Training Program is still in a fairly early stage of development and has yet to begin direct dissemination of information to village farmers through it's training component. Reside has been providing technical assistance to fish farmers and extension personnel on an ad hoc basis while gathering information for the survey of social and cultural factors that affect the adoption of fish farming practices in Sierra Leone. A teaching curriculum for aquaculture was developed and introduced at Bo Teachers College for 106 third year students. The student body is approximately 70% male and 30% female. This curriculum was intended to provide these students with the basic information and skills needed to develop fish ponds for the schools they will be teaching at upon completion of their studies in June 1989. Two groups of students at the SAIDAC training center are currently in the process of constructing fish ponds and will undergo classroom training during the coming rainy season when field work is difficult to undertake.

Pond renovation at the Bo Teachers College has resulted in upgraded production facilities including six production ponds and three brooder/nursery ponds. Testing of production practices is still in the early stages but results so far are indicating the need for a more integrated approach using animals in conjunction with fish to promote increased yields.

Food fish produced on campus are sold at reduced prices (Le 10 versus Le 20-25 per pound on the open market) to the school kitchen to provide fresh fish to the diet of the students. Work at SAIDAC has resulted in ongoing construction of two production ponds and improved management practices in the one production pond and three brooder/nursery ponds that were present prior to the arrival of the consultant.

The UCC has funded two fish farming projects through their Mini-Project Fund. This assistance is directed toward individuals who have shown an interest in fish farming as evidenced by their on-going operations and who were in need of financial assistance to enable them to expand their operations.

#### b) Monitoring Methods

The three page progress reporting system is somewhat awkward for the ATP at this point in time. As the conditions for conducting a meaningful training program were not in place at the time of the initiation of this project the ATP has been required to utilize most of the first year in developing these facilities and has not been able to conduct the direct farmer training and assistance that the format is interested in. This will not be the case in the coming year. The format seems appropriate to most project situations and useful in gauging impact from assistance. I particularly like the section concerning the multipurpose utilization of fish ponds.

#### c) Sustainability of Intervention

The subject of project sustainability was recently discussed during a consultative visit by Dr. James DeVries of HPI and included the aquaculture consultant, the Acting General Secretary for the UCC, the acting Development Secretary for the UCC and the Development Consultant for the UCC. The potential sustainability of this project is in doubt at this time. While progress toward meeting project goals has been made it has been much slower than originally predicted. Original intentions of training and development of project personnel at UCC affiliated sites has been modified due to technical considerations at some of those sites. A change of direction in the focus of target groups is required and under consideration. At present the consultant is recommending concentrating efforts toward site development in limited areas of the Southern and Eastern Regions where farmer interest is high, technical assistance is presently unavailable and UCC affiliated projects are in place.

There is a need for the training of at least one and preferably two counterpart positions to assume the duties of the on-site consultant upon his departure. One candidate for this training has been identified by the consultant. Commitment by the UCC for developing the means for long term support of these counterparts will be required. This will

include provision of transport, housing and salaries. A request by the consultant for this commitment by the UCC is pending and awaits CCD Board approval and subsequent procurement of funding sources. Assuming that approval is given and funding sources are developed there is still the problem of the amount of time the consultant will have to work with the candidates. This may require an extension of 6 months to one year of the originally projected two year project term in order to adequately train the counterparts for their role in maintaining the project.

If the UCC is incapable of meeting this commitment of resources on a long term basis then the sustainability of the project would require location of an alternate local organization that is capable of meeting this commitment. Failure to locate a willing partner casts doubt on the sustainability of this project. While it is assumed that the institutions i.e. BTC and SAIDAC will continue to produce fish and have a training component for their students it is difficult to determine if the other groups who will attend the training sessions during the coming year will be able to follow up the training with adequate site development without some form of longer term technical advice and guidance.

d) Economic Benefit Rate of Return

It is much too early to establish any meaningful information regarding the economic benefit of this project. Production rates have increased in ponds at Bo Teachers College in the last few months in some ponds but down time for renovation of the facilities has resulted in a lower overall production from the whole facility. With renovation completed the coming year will provide more meaningful information. SAIDAC is now undergoing construction of facilities and will not show any production figures until August 1989. Ad hoc advice provided by Reside to farmers and extension personnel around the country during his interviews can only be gauged on the basis of anecdotal information. While the feedback from these people has been positive and some improvement in construction techniques and management practices has been both reported and observed it would not be justified to place an economic figure for these activities at this time.

e) Summary of WH/AP Information Collected on HPI/Sierra Leone Project (Through January 1989)

The information contained in the summary appears to be correct and inclusive. With particular reference to the desired outputs of the two year term as assessed by Reside the status of each is listed below:

1. Analysis of principal cultural factors affecting adoption of aquaculture by Sierra Leone farmers. This is nearing completion and a report will be forthcoming in late April. While no one clear cut reason for high rates of abandonment was discovered a host of problems were identified. Of the problems

identified, no major cultural constraints inhibiting the potential for aquaculture development were found except in a few areas where some livestock practices are not permitted due to tribal/community laws. The primary problems appear to be lower than expected yields and smaller than desired fish size due to a shortage of inputs i.e. animal manures. It appears that some farmers are willing to pen their animals, at least at night, and if this practice can be introduced on a wider scale then it is anticipated that the increased yields and size of fish obtained from the fish ponds would increase the sustainability of fish farming in many areas.

2. Site Development:

-9 ponds have been improved at Bo Teachers College. 1 pond has been laid out in preparation for construction. 4 ponds have been improved at SAIDAC. 2 ponds are under construction at SAIDAC and 3 more ponds have been laid out in preparation for construction.

-no ponds have been constructed at UCC affiliated sites as of this time.

3. Field tested production systems in place at Bo Teachers College and SAIDAC. Field testing is currently on-going at both sites.

4. Training: 106 students at Bo Teachers College have participated in the aquaculture class at the college. An outgrowth of this aspect of the ATP is the development of a teaching syllabus for use on a nation wide basis that will be distributed to other teacher training colleges to be incorporated into their agriculture curriculums. 20 SAIDAC students are currently engaged in practical training in the construction and management of the ponds at that site. No UCC technicians have begun training at this time. The consultant has participated in two farmer workshops conducted by other organizations which included a total of 40 farmers. The consultant also participated in two training sessions for Peace Corps and Ministry of Agriculture and Natural Resources Extension Personnel that included a total of 27 participants.

## **HPI/Thailand**

**Evaluator:**

**Mr. Russel Gaulin, M.Aq., Chief of Aquaculture Project, HPI/Thailand (Auburn University Alumnus)**

Summary of WHAP Information Collected on HPI/CUHT/Thailand Project  
(Through July 1989)

**FUNDING SUPPORT**

\$15,000 were awarded from WHAP in September 1987 which has been used solely as salary monies for full-time aquaculture consultant hired by HPI.

**TRAINING SUPPORT**

Of persons associated with project, Mr. Sunny Danpongpee has been trained through WH/AP--Indonesia 85 Regional Training. He was sponsored by HPI.

**TECHNICAL CONSULTATIONS AND CONTENT**

Six technical visits have been made:

1. May 85 (Duncan): Suggestions for improving the water harvesting/aquaculture program at the Training center were made specifically in the areas of pond construction, appropriate fish species, and other technical assistance to be provided in the future.
2. Jan. 86 (Duncan): Recommendations for pond construction and management were made along with hiring a full-time , short-term consultant. This recommendation was the impetus for hiring Russ Gaulin.
3. Sept. 86 (Bates/Schmidt): Baseline data collection
4. Sept. 86 (Duncan): Duncan provided recently arrived Gaulin with orientation. Surrounding villages were assessed for possible pond construction sites. Fish fry were provided to one farmer.
5. Feb. 88 (Popma): Evaluated Gaulin's progress in facility development and pond construction, integration of aquaculture and agriculture, and training of students, farmers , and extensionists. All were proceeding well with exception of fish/duck and fish/swine demonstration trials which were behind due to flooding. Popma supported consultant's decision to concentrate on educating extensionists rather than farmers during the remainder of his contract. Also discussed record keeping, planning and evaluation.
6. Feb 89 (Popma and Bocek): No trip report received.

**PROJECT HISTORY**

This project developed as a result of Sunny Danpongpee's attendance at the Indonesia 85 training. Bryan Duncan followed that introductory training with a site visit to the Center for the Uplift of the Hill Tribes and made recommendations for improving existing ponds at the Center.

(Refer to communication of 14 August '89)

USA

FAX (704) 227-7422

To: Prville Stiles  
From: Russ Gaulin  
Re: WHAP evaluation of Karen Aquaculture Project (HPI)  
Date: 20 August, 1989

VERIFICATION OF SUMMARY OF WHAP INFORMATION COLLECTED ON THE KAREN  
AQUACULTURE PROJECT (THAILAND)

Funding Support: correct

Training Support: correct; Part Ia. has also been trained in  
greater depth than Sunny, but using HPI resources.

Technical Consultations and Contacts: correct

Project History: correct. Two of the ponds were originally built  
in what was a swamp, by Dick Mann, an American Baptist  
Agricultural Missionary, about twenty years ago. The purpose was  
for irrigation and also for fish culture. Then in 1977 three more  
ponds were built for fish culture, by Rupert Nelson, also an  
American Baptist Agricultural Missionary. Lack of technical  
knowledge and experience led to under-utilization of the ponds,  
and low production. The ponds received very little input or  
management.

Pond production at CUHT and interest in raising fish has increased  
appreciably since WHAP intervention; improvements continue to be  
made, although student inputs/benefits could be greater. The  
training/demonstration function of the ponds has been perhaps the  
greatest benefit both to the Center and to visiting farmers.

Since last year priority of the KAP has been on village extension  
to interested farmers. This focus is to overcome difficulties in  
travel, to make projects more credible to the subsistence farmer,  
and to bring the benefits more directly to those who need them.  
The KBC has taken over administration, and the CUHT is now lower  
priority for the Karen Aquaculture Project.

SCF COLLABORATION: Why it didn't occur: I was absent from Chiang  
Mai for much of the period when the evaluation should have  
occurred (doing village seminars and participating in HPI's  
Asia/South Pacific Regional Meeting and village extension visits--  
my annual "dry-season offensive"). At the same time, Mickey  
Levitan was just getting oriented to his new posting in Nakhon  
Sawan, and was quite wrapped up in it. As a result, neither of us  
contacted the other until much later, when we assumed that it was  
too far past the WHAP evaluation deadline to be of use to the  
Joint Center. It WAS due to WHAP that we did get in touch, and  
are now planning mutual visits for experience-sharing, etc.

BEST AVAILABLE

## INFORMATION REQUESTED FROM PROJECTS TARGETED FOR PARTICIPATION IN FINAL EVALUATION

### A. UTILITY OF TECHNICAL ASSISTANCE TO PVO AND VILLAGERS

The advice of WHAP technical consultants has been directly useful, feasible and consistent with local social and cultural systems. This is evident in that most of the advice given has been applied and has produced improvements. WHAP consultants have been very careful to only recommend those practices which are within the capabilities of both project budgets and farmers' resources. Of course, such short visits inevitably result in some inappropriate suggestions (for example, assuming that CUHT had the resources to conduct monosex fish rearing trials) but as there has been good follow-up, these have been corrected, and it can be said that overall the Technical Assistance has been very useful.

The implementation of Water Harvesting/Aquaculture techniques and adoption by most participants in the villages targeted, followed by the steady improvement in management and production, as documented in monthly Progress Reports, is the best evidence that the target population has benefited from the intervention. This is to say that the project goal of improvement of nutrition and income for participants is being met (in most cases). In every case, women and children eat fish as well as the men who are the main contributors to the activity. Women and children are responsible for harvesting and food preparation, and families eat together. In the cases of group ponds and wherever there is more than a family can eat, fish is distributed throughout the village either by sales or neighbor/relative gifts (really a form of time-deferred barter). This is based on many personal observations.

### B. MONITORING METHODS

The progress report form is useful but perhaps too succinct in that the bare numbers requested may be hard to obtain, and not tell enough of the story. Hence I felt the extensive explanatory notes which I attached to the report were needed. The ease of filling out the forms will depend on the organizational and record keeping ability of the project administrators.

Most project holders here feel no need for reporting progress at all, but some realize that it is crucial to the funding of continued assistance. The need is recognized at the level of the local organization (the Karen Baptist Convention), which is capable of completing the form, but would do a better and faster job of it if it were in Thai or Karen language!

### C. SUSTAINABILITY OF INTERVENTION

On the organizational level, provisions have been made for the continued funding, village extension visits, and other forms of support to the project, for at least two more years. HPI's resident technical advisor will leave but other inputs will continue, toward the goal of greater self reliance and

sustainability.

Pond building can be considered a permanent improvement to the land, and where benefits are adequate and inputs available to trained farmers, it seems safe to assume that they will continue to grow fish and make other use of the water. This is always only an assumption in development work, however! We must go on what farmers tell us, and the reaction is generally favorable; many interested farmers contact KBC for assistance, which is a good indication that this intervention is proving itself valid to these conservative and resource-poor farmers (who seem to come from Missouri).

Socially and physically there is great pressure toward more sustainable and intensive land use in this region, and pond building is a proven means toward this end, as evidenced by the U. S. farm pond program. There is little doubt that this is one form of land use which will increase greatly in the near future in Northern Thailand, so this has been a very timely project intervention.

#### D. ECONOMIC BENEFIT/RATE OF RETURN

An estimated 447 people belong to families which have benefited directly from this project (see WHAP progress report). 170 of these belong to farmers' families receiving village-level assistance at some point; these families have benefited from increased food security/diversity in most cases. The amount of benefit varies greatly from family to family; from minor impact as a source of occasional supplemental protein to being one of the major food/income sources in a couple of cases.

The economic benefit obtained by project participants is a tough one to determine, but if my estimate of 1688 kilograms is reasonable, multiplied by twenty baht per kilogram for locally sold salted mackerel (the alternative to fresh fish), the economic benefit amounts to 33,760 baht. But fresh fish sells for 20 to 30 baht per kilo, so we get something over 42,200 baht if all were sold.

This is not counting snails, mosquitofish, waterbeetles, glass shrimp and water morning glory greens, all of which are frequent bi-products of the ponds; also not included would be the added value of pond water in animal husbandry, on vegetables, or the possible reductions in health care expenditures resulting from better nutrition. Real as these benefits are, they are very difficult to put a monetary value on. If I randomly guess 10% of fish value, we get 46,420 baht.

Participating farmers often need spend little more than time and labor to become involved in the KAP. Twenty village ponds did not receive a start-up grant, with costs estimated at 4,000 b per pond totaling 80,000 b. A further 13 ponds received a 2,000 b subsidy, so cost another 26,000 b. (total 106,000 b). In fact I believe these are inflated estimates as the subsidy program tended to

produce high estimates from farmers. As ponds are expected to last ten years before major reworking, the cost can be amortized in a cost/benefit analysis. A 4,000 b pond roughly breaks even after 160 to 200 kilos of fish: 80 kg for a 2,000 b pond.

Farmers spend at most one half hour per day on the better-run ponds, less on the less intensive. Harvests take about two half days per year. Farmers do not assign an hourly monetary value to these small amounts. Other inputs generally consist of agricultural bi-products whose value, if any, is one of opportunity cost only: some are otherwise wasted. Cost of transporting rice bran or manure is sometimes counted. We could estimate about 200 b per year per pond, or perhaps 7,800 baht per year in the 39 ponds in the progress report.

This confused picture is further complicated by the realization that income from production should increase disproportionately as farmers beat the learning curve, ponds become more fertile, and the price of fish rises with increased scarcity of wild fish.

In any case, farmers are convinced that the return to labor and inputs is two to three times that from rice per unit of land, and even better if poor paddy land is put into fish. This comparison with rice is the deciding factor in determining the long term success of the project.

cc: Robert Pelant HPI Program Director/Asia  
Niwatchai Suknaphasawat, HPI Country Representative

**SCF/Bangladesh**

**Evaluator:**

**Ms. Leslie Harrison, Program Advisor, SCF/Bangladesh**

## WHAP INPUTS

Total No. of Visits: 3 visits comprising 14 person days

Programming Visit:

None

Technical Assistance Visits:

John Grover, August 1986--1 day

Alex Bocek, April 1987--8 days

Alex Bocek, April 1988--5 days

Evaluation Visits:

None

Training:

Michael Levitan, SCF Country Director for Bangladesh, attended the WHAP training at Auburn in 1986 and a special week long course was designed and conducted for Alamgir Bhuiya at Auburn in 1987.

Support Grant:

\$14,867 was awarded in 1986 for developing a two-hectare community pond for fish culture to provide income for primary school and women's health center.

## PROJECT OUTPUTS

Ponds Constructed or Improved:

2 community ponds have been constructed.

Beneficiaries:

The Boriachong Aquaculture Project funds a health center which serves a population of 8,500 villagers and a primary school which serves 1156 families.

The Waxman project funds women's health activities and interventions for at-risk children benefitting 1156 families. Villagers in these areas also benefit by the employment generated by these two projects.

Training:

SCF is providing on-going training to villagers at both Boriachong and Waxman projects for managing ponds with the intention of transferring responsibility for these community ponds to them in a few years.

Fish Production:

Unknown. Fish is sold in nearby towns.

Integration of Agriculture and Aquaculture:

Committees Associated with Ponds:

The Boriachong Project belongs to the local Village Development Committee and the Waxman Pond Project belongs to the village Women's Sectoral Committee.

**Final Evaluation of WHAP:  
Field Evaluation of SCF/Bangladesh WHAP-Assisted Projects**

**1. Utility of WHAP-funded Technical Assistance and Training to PVDs and Rural Villagers**

**Technical Assistance:**

The technical assistance provided through WHAP has been extremely useful in assisting SCF/Bangladesh to improve its understanding of fisheries management. Various technical visits were funded through WHAP and the consultants gave suggestions that were immediately useful, on a variety of topics including stocking ratios, feasibility of growing new species and additional crops, pond design and the feasibility of potential new fisheries projects. They also provided additional advice through consultancy reports and follow-up correspondence, and their ideas were usually very appropriate in light of PVD budgets and the social and cultural reality of rural Bangladesh.

The rural villagers have also benefitted from the technical assistance SCF staff received through WHAP. Villagers are working at both the Boriachong and Waxman projects and are learning, through SCF's on-site staff, how to manage these projects. SCF plans to continue training these villagers so that within several years, they will be able to assume full responsibility from SCF for the management and administration of these projects.

**Training:**

The training given through WHAP to our senior staff was useful in that it provided them with a well-rounded and practical training in fisheries management.

**Benefit to the Target Population:**

SCF/Bangladesh has two fisheries projects, the Boriachong Integrated Aquaculture Project and the Waxman Project.

\* Boriachong project: This project belongs to the local Village Development Committee. It is a "community endowment", the profits from which are designated to provide permanent funding for the health center and the salary of the primary school teacher. From the Boriachong project's first year of revenues, \$805 were used to pay expenses of the primary school (the teacher's salary for the full year plus certain school repairs), while an additional \$592 went to buy and transport medicines and supplies for the village health center.

\* Waxman Pond project: This is also a community endowment, and is a new project which belongs to the village Women's Sectoral Committee. The women have decided that 80% of the net profits will be used to fund women's health services and interventions for nutritionally at-risk

children. An additional 10% will go to the group funds of women's savings groups who work at the pond during the growing season, and the final 10% will go into the Women's Sectoral Committee's group funds for their group projects.

## 2. Monitoring Methods

Correspondence with Auburn through WHAP has been extremely helpful to the project. For example, in late 1988 after the floods in Bangladesh, SCF requested that Auburn provide information about fish poisons. Auburn responded with a pamphlet that answered all our questions and gave additional information which will be useful for future decisions.

## 3. Sustainability of Intervention

Fish is a staple in the Bangladeshi diet and demand for the carp grown by SCF's projects is high. In addition, the villagers are very interested in the continuation of the community services these projects are designed to fund. There have been some difficulties with damage caused by flooding, but recent work has been done to modify the projects to prevent difficulties during future floods. SCF considers the prognosis for sustainability to be good as long as future flooding does not worsen, and is working to develop a management structure at the local level to oversee project management after SCF leaves.

## 4. Economic Benefit Rate of Return

### Impact on Food Security:

Fish from these two projects are sometimes sold in the surrounding villages. More often, however, the fish are sold in nearby towns where there is a greater demand for the high quality product produced by the project.

### Economic Benefit to the Beneficiaries:

The health center which is funded by the Boriachong project serves a population of 8,500 villagers and the primary school serves 1156 families. The women's health activities and interventions for at-risk children funded by Waxman will benefit 1156 families as well. The villagers in the area also benefit by the employment generated by these two projects.

### Community Involvement and Contribution:

The community has contributed over 4,000 free hours of labor to construct and repair the infrastructure of these projects, and community members frequently contribute time to attend project meetings.

## Scope of Work for the Evaluation and Individuals Interviewed

Save the Children contacted CARE/Bangladesh to investigate the possibility of doing a joint evaluation, but CARE personnel were unable to participate. The evaluation was therefore done by Leslie Harrison, Program Advisor for the Save the Children/Bangladesh field office, who works in close coordination with other Save the Children staff and the villagers to develop these two projects.

SCF has been engaged in its own evaluation of these two projects, to determine their feasibility as models for additional "community endowments" in other villages. As such, most of the questions in this evaluation have already been thoroughly discussed among the senior SCF program staff, and a number of meetings have been held with the villagers to discuss their involvement with and commitment to these projects. This evaluation was based mostly on information from these past discussions and community meetings. In addition, formal interviews were held with Alamgir Bhuiyan (Impact Area Manager) and Jamil Ahsan (Senior Engineer who has worked closely with these projects).

**SCF/Bolivia**

**Evaluator:**

**Mr. Felix Fernandez: Circuata Project Promoter, Save the Children**

Summary of WH/AP Information Collected on SCF/Bolivia Project  
(Through February 1989)

**WH/AP FUNDING SUPPORT**

No financial support has been provided to this project by WH/AP.

**WH/AP TRAINING SUPPORT**

WHAP consultant, Dr. Thomas Popma and Silvana Castillo of CARE/Guatemala Aquaculture Project spent 6 person days training (3-day short course) 23 SCF regional voluntary promoters at Circuata during technical assistance visit in April 88.

**WH/AP TECHNICAL CONSULTATIONS**

Two technical visits have been made: April 88--6 person days (Popma and Castillo) and March 87--9 person days (Ron Phelps).

RECOMMENDATIONS AND IMPACT OF PHELPS VISIT

Because of the steep terrain in Inquisivi, the consultant felt most ponds could be a maximum size of only 200m<sup>2</sup>. Due to lower temperatures in the high elevations typical of Inquisivi, Phelps recommended common carp as the species of choice. The lower elevations below Circuata were suitable for either carp or tilapia but Circuata proper would be suitable for carp only. He felt composted green plant material for fish feed was plentiful in the Circuata area. He recommended a pilot project be implemented which was integrated with the farming system. He felt SCF's school garden projects in the both areas offered good sites for demonstration projects once they were established. He advised beginning with the Miguillas school since it was the warmest area visited and had space for several ponds. If developed, Phelps felt the Miguillas area could produce fingerlings for Inquisivi and Circuata. He recommended that laying hens be combined with fish production due to the limited availability of nutrients and that if aquaculture proved to be unfeasible, laying hens would be the best alternative for supplying protein to the local diet. Phelps suggested a community by community study be conducted to determine: the number of acceptable pond sites available, the number and type of livestock per household, and how manure is used. The concrete pond at Inquisivi was recommended as a holding pond for fingerlings to be distributed. Since Phelps' visit common carp was sent from Auburn University for introduction into demonstration ponds. (WHERE?)

RECOMMENDATIONS AND IMPACT OF POPMA/CASTILLO VISIT

A male/female culture of *Tilapia nilotica* with frequent partial harvests of fish of all sizes was recommended with domestic animals maintained over the ponds at night or during periods of supplemental feeding. Common carp, if available could be polycultured with tilapia. Like Phelps, Popma recommended that in the early stages the program be limited to the Miguillas-Circuata region. He felt that a 3-5 year commitment from SCF would be necessary to establish the project and suggested having an SCF staff member spend 4-6 weeks at the CARE-Guatemala Integrated Aquaculture Project in preparation for manning the program. Quarterly visits by a qualified technical consultant such as Silvana Castillo were also recommended. Financial commitments beyond staff requirements were also outlined: construction of 2 small demo/fingerling ponds, minor equipment and supplies (about \$2000/Year 1 and \$1000/year for following years), and \$500-\$1000/year meetings and trainings.

**SITES**

Inquisivi, Circuata, and Miguillas

**BACKGROUND**

SCF activities in the Department of Inquisivi include agricultural development as represented by livestock vaccination, school gardens and field demonstrations of various plant varieties. A network of volunteer agricultural promoters is being developed with representatives in each community. Malnutrition is said to be a major problem in the area, especially with children. It was this issue which prompted SCF's interest in fish farming. Fish has not been available for consumption in the past but the people have indicated an interest in it. Some farmers in the Circuata area have started fish farming on their own in small ponds (app. 7 ponds).

March 10, 1989

Mr. Gary Shaye  
Latin America Region  
Save the Children  
Westport

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Ref.: Information on the evaluation of WHAP projects

1. General References

The project WHAP was initiated in the area of Circuata-Miguillas for SCF in October of 1988, the month of which were cultivated the first fish of *Tilapia Nilotica* in some fish ponds constructed by the community. Currently, there are 22 fish ponds in eight communities of the lower lands of Circuata. The project is being followed up and assisted by a technician of the SCF who is working together with the promoters of the participating communities.

Since the Westport instructions state that CARE function as co-evaluator of this project, we contacted Frank Sullivan the FO Director, who informed us that CARE/Bolivia were not participating in this WHAP project and recommended it to a mission of the University of Auburn. This report was prepared because of the evaluation carried out by the promotor of the Circuata project.

2. Information on evaluation

A. PVO's and communities use of Technical Assistance

- The WHAP recommendations were practical enough and were able to be used by the SCF technician (who dedicated 1/4 of his time to this activity) and who works with an through the promoters of the communities.

- SCF did not need to give financial aid for the ponds that were constructed for the individual beneficiaries and cummunals. The promotor considers himself capable of implementing this project as long as he receives support from Auburn once a year.

- The construction of the fish ponds for acuaculture production was spontaneously decided for the beneficiaries, after having received the training through the course in April. Generally, decisions are made through community meetings.

- Short letters are distributed through WHAP for the construction of ponds, prepared for the Cuerpo de Paz organisation. In general, it is regarded as relatively useful; however, lack of information about size and dimension reduces alot of its' effectiveness.

- The training course given in April by Thomas Poppa and Silvana Castillo was the only opportunity to receive technical assistance. It was found useful for both its' content and the method and presentation of the different aspects. Since this time a certain will has arisen in the communities, until some of them decide to carry out their projects

- Since the project area is divided into 2 microclimates (temperate and arid), there were problems with availability of the appropriate species in the fish ponds. In the temperate area (5 communities) there is a demand for the carrying out of the program, however, we do not have carpa fish ponds, which would be the appropriate species for these conditions.

#### B. Monitoring Methods

There is no way of monitoring because the instructions and model are unfamiliar (was probably not sent to Ciruata)

#### C. Sustainability of interventions

In order for WHAP to become self-sustainable it would require 2 years of technical help and supervision. The project has actually been carried out for 6 months and the fish are in the process of going through their first phase of reproduction. Up to now no culture has been produced. For this reason we would consider it very early to leave them unattended.

Further assistance would have to basically include care and nutrition of the fish: therefore, maintenance and equilibrium of the icticola population. As well, the beneficiaries would have to follow a routine schedule of mainteance in order to maintain the ponds in their appropriate conditions.

Since the general operation of WHAP is quite simple and has been understood by the participating rural farmers, in 2 years the cummnity projects would settle down enough to become self-sustainable.

## D. Economic Benefit

- Number of participants - Up to date 26 fish ponds are being constructed, 4 of which are comunales, and 22 of which are individual. Generally, the land used should be individually owned and not the property of the community. However, one of the communal ponds has 40 participating families.

- It may appear negative that these fish ponds are family size projects and that they do not include the community at large; however, the positive aspect of these ponds is that they can be adequately managed by individuals owning their own agricultural land. Furthermore, a greater care has been observed by the participating families.

In total there are 8 participating communities and 127 beneficiaries involved in the project.

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 NUMBER OF PONDS AND PARTICIPATING FAMILIES  
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COMMUNITY	NUMBER OF PONDS		No OF FAMILIES
	COMMUNALS	FAMILIES	
Miguillas	1	3	30
Limon Vado		2	2
Khora		8	8
Canamina	1	4	34
Coop. San Jose	1		40
Loma Linda	1		6
Pichincha		6	6
Villa Barrientos		1 (*)	1
-----			
TOTAL	4	24	127

(\*) Ponds without fish cultures yet

- Beneficiary contributions. - for the construction of the ponds and fish cultures the beneficiaries have brought the following:

\* Manual labour

\* Local material (stones, wood)

# Participation in training course (28 rural farmers, men and women)

- Since the project is its' initial phase one cannot measure its' impact of fish production nor in securing food for the communities of families. For this very reason there are no indications of the value of it's economic production.

- Since SCF have approached nutrition programs, the WHAP project has acted as an alternative in reducing the number of malnutrition cases (55% of the children). In the project area the consumption of fish is quite occasional and the conditions of preservations are rarely acceptable. Usually, they are transported to an area 200 km away and the price of transportation is prohibitive, (around \$1 U.S. per kg).

Since the project is very new (less than 1 year) this evaluation is incomplete in certain areas. We are confident that this type of work is very important for the increase of disponibility of proteins originating from animals and the improvement of nutritional level of the families of rural families. On the other hand, when good results are produced new communities get involved and in this way expansion is possible. In light of these considerations it is thought that at the end of 1989, a new evaluation could demonstrate concrete results regarding aspects presented in this evaluation.

#### E. Conclusions and Recommendations

a) Reinforce the training of the rural technician and supervisor for the maintenance of the fish ponds and selection of fish in accordance with their state of development.

b) Construction of a pilot fish pond in the Colegio Technico Agropecuario de Circuata which would serve to train apprentices and rural farmers in producing fish for it's distribution amongst and communities.

c) Establish an evaluation model which would facilitate monitoring and permit the evaluation of the project's impact in the community.

d) Maintain a promotor's training course.

e) Look for ressources for the acquisition of carpa and tilipia fish in countries that have similar programs.

## **SCF/Nepal**

### **Evaluators:**

**Mr. Bill Buffum, CARE/Nepal**

**Mr. Mark Williams, Program Advisor, SCF/Nepal**

## Summary of WHAP Information Collected on SCF/Nepal Project

### WHAP INPUTS

Total No. of Visits: 5 comprising 54 days

Programming Visit:

Nancy Blanks, May 1985--2 days

Technical Assistance Visits:

J.R. Snow, November 1985--9 days

Bryan Duncan/Rudy Schmittou, January 1987--7 days

Alex Bocek/David Hughes, April 1988 (This visit was also conducted to provide training to SCF and CARE staff.)--24 days

Monitoring/Evaluation Visit :

Ralph Montee, April 1986--12 days

Training:

Four SCF staff were trained in 6-day course during April 88 visit.

Support Grant:

\$14,500 was granted in June 1986 for development of 4 irrigation canals benefitting approximately 400 people over a 41 hectare area.

### PROJECT OUTPUTS

Ponds Constructed or Improved:

Eight ponds have been constructed since June 1987 and all eight are used for fish production.

Beneficiaries:

Eight households comprising 71 people are directly benefiting from aquaculture ponds. (Eight more farmers had applied to start ponds this year as of March 10, 1989.)

Fish Production:

Amount of fish produced is unknown since only 2 ponds had been harvested for the first time when this report (March 10, 1989) was made.

Integration of Agriculture and Aquaculture:

Banana trees are planted around all eight ponds and one pond is also involved in swine production. All ponds supply water for kitchen gardens.

Networking with In-Country Resources:

Government of Nepal Department of Fisheries

### OTHER INFORMATION

Average Initial Cost of Pond to Farmer:

Approximately \$350 for a 1 ropani (75' x 75') pond

EVALUATION OF THE WATER HARVESTING AND AQUACULTURE PROJECT'S  
IMPACT ON SAVE THE CHILDREN'S DEVELOPMENT PROGRAM IN GORKHA  
DISTRICT OF NEPAL

I. INTRODUCTION:

Bill Buffum from CARE/Nepal and I conducted an evaluation of the impact of WHAP support on the Save The Children/Nepal Field Office program and the villages in Gorkha district where aquaculture projects were implemented.

Data for this evaluation was collected during a field visit in which we observed the harvesting of two ponds and conducted interviews with the aquaculture farmers themselves. Additional information was taken from other reports produced by SCF/Nepal.

Also included is a recent case study I conducted on the impact of the aquaculture program in Deurali panchayat, Gorkha District. Deurali panchayat contains seven of the eight aquaculture ponds that have been initiated with WHAP support. Rather than repeat much of the background information already gathered, I will sometimes refer to the case study .

Following are the results of the CARE and Save The Children collaborative evaluation of WHAP impact.

II. UTILITY OF TECHNICAL ASSISTANCE TO SAVE THE CHILDREN AND THE VILLAGES OF DEURALI AND DHUWAKOT PANCHAYATS IN THE GORKHA DISTRICT:

Evidence of Technical Effectiveness and Usefulness:

Three years ago there were no aquaculture ponds in Gorkha district. Aquaculture was not really considered feasible in this area because of the climate and topography. All government supported projects are located in the low flatlands bordering India. No PVOs were involved in aquaculture prior to 1987.

Following various visits by WHAP technicians, outlined in previous reports, a program was launched in June of 1987. Within this time period, eight aquaculture ponds have been established in Save the Children impact areas.

Visits by various WHAP personnel, beginning in May 1985, concluded that aquaculture was in fact feasible in certain areas of Gorkha district where SCF was implementing its Community Based Integrated Development Program (CBIRD) program. Deurali and Dhuwakot panchayats were chosen as the most appropriate areas to implement the program.

Field visits concluded that the technology was appropriate for the area and that replication would be possible because of the relatively low financial investments needed to start an aquaculture project of the scale suitable to the conditions of Gorkha district.

Quotes from the most recent semi-annual progress report of the Nepal Field Office give an indication of the attitudes of aquaculture farmers regarding their new enterprises:

"....The eight new ponds begun in the past eighteen months are having various degrees of success. Many of the first year farmers have found their fish to be smaller than anticipated. While their neighbors, having had ponds for a second year already, are impressed with the growth of their fish. These farmers, however are not discouraged. When asked if they will continue, all of the farmers said yes. None of the farmers have yet harvested their ponds. They will wait another month for higher market prices. Once the ponds are harvested and prior to the next stocking, the farmers will meet as a group with SCF staff to discuss reasons for varying productivity....."

During our visit we witnessed the harvesting of two ponds. One farmer was somewhat discouraged and confused as to the small amount of fish taken from his pond. He did say that he had been selling small amounts of fish to neighbors during the last few months. Still, his production had not meet his expectations.

This same farmer walked two hours the next day to join us in witnessing the harvesting of another pond. The results of this harvest were much better and encouraging to all. There are three ponds located in the immediate vicinity of the second harvest. The other pond owners were present. All stated that this harvest was better than theirs had been, but that they hoped for the same results next year.

Enthusiasm for aquaculture is very high. Eight more farmers have already applied to SCF for technical support to start their own ponds this year.

#### Is Assistance Oriented to the Practical Needs of PVO Field Staff:

The training provided to CARE and SCF field staff was very useful and appropriate according to the evaluation of the training by the trainees.

The staff attending the training, conducted in April 1988, were Junior Technicians in Agriculture. They had studied some aquaculture topics, but were not capable of implementing or providing sufficient advice to interested farmers on aquaculture.

The facilitators of the training, Alex Bocek and David Hughes enlisted the help of Nepal's Department of Fisheries to insure that the content of the training was appropriate to the needs of our staff.

The training gave them the skills needed to determine the feasibility of an aquaculture project in a given location, design and estimate of pond construction and analysis of the potential profitability. They have used the skills acquired during the training to advise six new farmers on the feasibility of their pond sites. All six ponds had positive results this year and all of the farmers are continuing their projects.

### Financial, Cultural, Social Conditions:

WHAP consulted with indigenous organizations insuring the programs financial and cultural feasibility. The ponds are small (approximately 75'x 75', the minimum size pond that can realize a profit as determined by the Department of fisheries) and single-family owned.

Only two of the eight farmers have had to take loans from the bank to start their projects.

Save The Children, in order to promote the replication of the program with as little outside support as possible, has promoted linkages with lending agencies when necessary. A \$50.00 grant is provided to new entrepreneurs to help with the initial construction of their ponds. This amount, on an average, is sufficient to cover the labor costs of construction. SCF finds this amount a small price to pay for a project that has strong potential for income generation and additional nutritional value.

However, it would not be possible for an agency like CARE or SCF/Nepal to hire a permanent staff person specifically for aquaculture.

Fish are eaten by all casts and ethnic groups of Nepal. Fish cultivation has no negetive social or cultural impact.

### III. MONITORING METHODS:

We thank whoever designed the three page progress reporting system. Its simplicity allows our field staff to collect the data needed. As well, the aquaculture farmers are not yet sophisticated in data collection and record-keeping. They can, however, provide the information requested in the format. The validity of the report would be greatly reduced if the information requested, and the manner in which it is requested, were more complicated.

The reporting format is good for general information regarding the growth and progress of the program as a whole. For project specific monitoring and analysis of ways in which to continue to improve pond management and production, we have found the data collection forms provided by WHAP to be of great help. These forms are helping the NFO and the farmers compare feeding and fertilizing practices as well as other methods of management. This is an essential component of the program due to the fact that we have no other references to methods of aquaculture farming in the middle hills of Nepal. This data will also benefit other agencies and possibly the Department of Fisheries in Nepal.

#### IV. SUSTAINABILITY OF INTERVENTION:

##### 1. Evidence of the Potential for Sustainability:

Farmers are needing less outside support each year. The last six farmers started their ponds with no outside financial assistance other than the \$50.00 given to them by SCF.

Eight more farmers have already placed applications for new pond construction assistance. This indicates that the enthusiasm for the program is coming from the farmers and not from SCF.

Every farmer has indicated that he will continue his aquaculture production next year. All have stated that "fish fields", are easier to manage and financially more profitable than other crops. However, we do not have the hard data to verify this statement. The farmers are just realizing the financial management practices needed to understand what exactly they are spending as compared to what they are making. This will be included in the training proposed for the aquaculture farmers in April of this year. (please refer to the case study for more information regarding the training).

Once a core group of farmers are skilled in aquaculture, they can teach their neighbors. The design of the program was to attract only those farmers willing and wanting to start fish ponds. No-one is pushing. The farmers are requesting assistance. The assistance is minimal, as mentioned earlier, and farmers can establish the projects, even now, with minimal outside support.

Basically, from two ponds in 1987 to eight ponds in 1988 to possibly sixteen ponds in 1989, we assume the program to be desired, therefore it has a great chance to be sustained.

The Department of Fisheries is very interested in the progress of the program. A recent meeting with the Department Chief indicated his desire to start a fisheries

consortium in Gorkha. We have the support of the government and the financial support of the Agriculture Development Bank when needed.

Some farmers consider fish as a by-product of the ponds. Below every pond is a kitchen garden growing vegetables that could not be grown without the water collected for the fish ponds. Although not a desired practice, many of the farmers use the collected water for irrigation.

There does not seem to be any major obstacles preventing the continuation of the program. The market could become overcrowded at some point, but it is not a problem in the foreseeable future. The market would cause changes in marketing approaches and possibly the number of people involved in aquaculture, but would not damage the concept of water harvesting and aquaculture.

#### V. ECONOMIC BENEFIT/RATE OF RETURN:

The eight ponds have directly benefited eight households and 71 of their immediate family members. The number of indirect beneficiaries is in the hundreds.

We have only very recently started collecting data on the actual rate of return. We do know that the ponds have not yet reached their predicted rate of return. This is the first harvest for most of the farmers, and the second harvest for only two farmers.

The average initial investment for a one ropani pond is Rs.10,000 (approx. \$350.00) and yearly operating costs average Rs.700.00 (approx. \$35.00). This year most farmers averaged 50 Kg. of fish production. The price in the market for one Kg. of fish is Rs.40.00 (\$1.50). This amounts to possible sales of Rs.2,000 (\$75.00).

The expected rate of return for a one ropani pond is 160 Kg. The farmers are only achieving 1/3 of the projected production. As they become more skilled in their methods of feeding and monitoring the growth of the fish, and after the proposed farmer training in April, it is assumed that they will produce the expected amounts.

The impact of WHAP on the Nepal Field Office program and the villagers of Gorkha has been great. We have been able to initiate a program that is appropriate, beneficial, and extremely liked by the farmers of Gorkha. We hope that we can continue to receive support and work closely with WHAP.

#### VI. VISITS OF WHAP PERSONNEL TO NEPAL:

Programming visits: Nancy Blanks, May 1985

Feasibility Study: J. R. Snow, November 1985  
Baseline Data Collection: Ralph Montee, April 1986  
Technical Assistance: Bryan Duncan/Rudy Schmittou, Jan. '87  
Technical Assistance and Training: Alex Bocek/David Hughes,  
April 1988

# A CASE STUDY OF AQUACULTURE PROJECTS IN DEURALI PANCHAYAT

## INTRODUCTION:

SCF Nepal has been implementing a Community Based Integrated Development program in Gorkha District of Nepal since 1981. Agriculture and Economic Development however, were later additional components of the program. Aquaculture was included in the Ag./Economic Development sector in the spring of 1987. This case study was conducted two years after the inception of the program with the following objectives:

## OBJECTIVES:

- \* To assess the progress of aquaculture as an income generating project, for individual households;
- \* To assess the sustainability of the aquaculture program after phase-over; and
- \* To determine the necessary follow-up needed from SCF/Nepal.

## METHODOLOGY:

Data for this case study was gathered during interviews with aquaculture farmers, from previous reports/surveys conducted by the NFO and personal extensive involvement in the program.

## NOTES FROM PREVIOUS VISITS:

Chronological order of visits to Nepal:

- |                 |               |                          |
|-----------------|---------------|--------------------------|
| 1. Nancy Blanks | May 1985      |                          |
| 2. R. Snow      | November 1985 | Feasibility study        |
| 3. Ralph Montee | April 1986    | Baseline Data Collection |
| 4. Bryan Duncan |               |                          |
| R. Schmittou    | January 1987  | Technical Assistance     |
| 5. Alex Bocek   |               |                          |
| David Hughes    | April 1988    | Staff Training           |

In February 1987 Bryan Duncan visited four potential aquaculture sites in Deurali and Dhuwakot Panchayats of Gorkha District. After Mr. Duncan's visit and with the assistance of Mr. Bharat Sharma, Director of Nepal's Department of Fisheries, designs, estimates and a projected economic analysis were prepared for these sites. Mr. Sharma and Keith Leslie, SCF/Nepal Director, again met with the farmers to make a final assessment of their ability to manage the proposed aquaculture projects. It was felt that only two of the farmers exhibited the confidence and skills necessary to undertake the projects the first year.

Aquaculture in the middle hills of Nepal is virtually a new concept. In order to promote the replication of such projects and to abide with SCF's goal of building self-reliance, a linkage between farmers and

lending agencies needed to be established. It was agreed that the farmers would take loans from the Agriculture Development Bank in Gorkha and Save the Children would provide technical and logistical support.

Loans were granted to the farmers and construction was started in May 1987. Kim Bahadur Adhikari Borrowed Rs.6,000.00 and Rishi Ram Sharma Rs.7,000 at an interest rate of... The pond in Deurali, owned by Mr. Adhikari, is 0.9 ropani and the pond in Dhuwakot, owned by Mr. Sharma, is 1.06 ropani. Pond construction was supervised by Save the Children using designs provided by HMG's Fisheries Department. HMG also provided a technician who worked one month with the farmers during the initial stages of construction and fingerling distribution.

The ponds were stocked on July 4th 1987. The stocking included:

	<u>DKT</u>	<u>DRL</u>
1. Common Carp	100	75
2. Bighead Carp	80	60
3. Grass Carp	60	45
4. Silver Carp	160	-
	-----	-----
SUB TOTAL =	400	180

Curious friends and neighbors watched and waited, most with suspicion and doubt that the climate would permit sufficient growth for any profit to be realized. Only four months after stocking (the ponds were stocked late because due to delays in the processing of the loans) both farmers averaged a profit of ..... Rice, on the same amount of land would produce an average profit of..... From this example we can say that farmers will continue to generate more income through aquaculture than from other crops using the same amount of land.

The following year the number of ponds in Deurali increased to eight. Each pond averages one ropani in size. This is considered, by HMG technicians, to be the minimum pond size necessary to realize profit. All farmers initially allocated this minimum amount of land to aquaculture to "test the water" before expansion. The program is now very visible and interest in aquaculture continues to grow. Eight more farmers have applied for assistance in initiating ponds in 1989.

Save The Children provided Rs.1,000 to each new farmer as an initial grant for construction of the ponds. Our infrastructure overseers aided the farmers in the design, estimate and construction of the ponds. Frequent visits by HMG fisheries technicians were arranged by SCF. Irrigation projects, implemented by SCF with the financial support of WHAP, have also contributed greatly to the amount of water available for existing ponds and for the possibility of expansion of the program. A total of \$14,000 was used for the aquaculture and irrigation program between December 1988 and June 1988.

The skills of our staff had to be strengthened to accommodate the demand of the farmers. Consultants from the Water Harvesting Aquaculture Project (WHAP), Auburn University, conducted a training in Katmandu in April 1988. Four SCF and five CARE staff attended. Alex Bocek and David Hughes facilitated the training. Mr. Bharat Sharma again provided substantial assistance.

The objectives of the training were:

- \* To create awareness of Water Harvesting in Ponds and Integrated Aquaculture (WHPIA):
- \* To accelerate rural development of aquaculture;
- \* To provide development practitioners enough information for assessing feasibility of WHPIA projects; and
- \* To provide participants an opportunity to interact with trainers with regard to WHPIA possibilities at their working areas and arrange for possible technical assistance.

The training expanded the existing skills and knowledge of our staff in site analysis i.e., water supply and demand of the pond according to size, soil conditions, pond design and construction and profitability analysis. These additional skills increased the confidence and enthusiasm of our staff to assist interested farmers and expand the program. However, our staff feel the need for more skills before they can independently facilitate a training for farmers in the field.

#### AQUACULTURE POTENTIAL, RECOMMENDATIONS/CONCLUSIONS:

Each year more farmers are seeking advice from SCF staff on fish-pond construction and means for financial support. We feel sure that after the harvest in winter/spring of 1988/89, the number of farmers interested in constructing fish ponds will at least double in the low-lying panchayats of Gorkha District.

#### Market:

The area where the ponds are located can easily support more projects. Irrigation has increased the amount of water available for aquaculture. There is a main road nearby, a market and a very large hydroelectric project underway. Several new industries, including a rubber factory and a cement factory are also being constructed. The market is expanding, but the farmers have not received training yet on marketing techniques. This is an essential component for the future development of aquaculture as an economic development activity for these farmers. At present, most fish do not reach the market but are sold on site because of the high demand and low supply. There is no middle man involved even when fish are taken to the market. It is assumed this will change as more fish are cultivated and farmers will need to know how to adapt to a changing market. Vegetable farmers are presently facing this same problem. The vegetable market is becoming crowded and alternative methods of marketing will soon be needed.

(Details of Vegetable production and markets can be found in "A Case Study of Vegetable Production in Deurali").

### Training:

During the interviews it was noticed that production varied between ponds. Newer ponds were not reaching the expected results outlined in the feasibility studies done by HMG technicians. But, the farmers were not discouraged. All farmers feel that it will take a few years for their ponds mature.

In some ways this is true, but it also proves that there is a great need for further technical training. There has not yet been a training directed at the needs of the farmers. SCF must find the appropriate level of technical assistance and conduct such a training in the panchayat.

The first two farmers were given more technical support than other farmers who began this year. Our former agriculture officer in Deurali did not give this program sufficient attention. Also, we have reduced our agriculture staff in Deurali and consequently less support was given during the transition. The local agriculture staff in Deurali also need more skills and understanding of the essentials of an aquaculture program. They should play an active role in the planned training for the farmers. Program staff must also continue to backstop the program from Kathmandu.

Recently, data was collected from all farmers regarding their feeding practices, number and amount of fingerlings stocked and various types of pond integration. This data should be used to prepare a training for the farmers and circulated as a means of information sharing.

Farmers should meet before stocking their ponds next year to discuss results and reasons for the differences in production. Save the Children should organize this meeting.

One farmer in Karmising stated that he will not integrate pigs with his pond next year. He said that he cannot afford to feed both the pigs and the fish. We had assumed that this would not be a problem. Integrating ponds with pigs or ducks was, and still is, encouraged. The program is still young and there is still much to be learned. It, possibly, can impact villages in the hill areas of the entire country. Close monitoring of the program is necessary for a few more years.

It was also noted that none of the new pond owners took loans from the bank. These farmers are evidently from higher income brackets. Now that aquaculture has proven to be feasible, we should look into ways in which it can be utilized by poorer farmers as well.

Farmers should also be encouraged to produce their own fingerlings in the future. However, the interviews indicated that the farmers need more time, skills and confidence before this can be undertaken (at least one more growing season). When one or two of the more advanced farmers are ready, they could grow enough fingerlings to support the others. Fingerlings could also be sold outside the area. Even now, the Department of Fisheries cannot fulfill the demand for fingerlings in Nepal. We should help the local farmers organize. The sharing of

this year's data will be a first step in doing so. The NFD needs technical support in order to initiate these ideas. The program is not large enough to justify hiring a person specifically for supervising aquaculture projects, but frequent on site support is needed. Again, it is imperative that local staff play a large role in the proposed aquaculture training for farmers. Continued WHAP support would be preferred and appreciated for further extending and strengthening aquaculture in Gorkha.

Aquaculture in Gorkha is presently individual or family-based. But, it has drawn the attention of communities and Village Development Committees. Several Community Sub-Committees have forwarded proposals for aquaculture to the Village Development Committee for recommendation and approval. Community projects would add a new dimension to the aquaculture program. Some local schools, having their own land are planning to establish integrated income-generating projects. Aquaculture could be considered for these projects. Although, more community management would be required.

Hard data regarding the actual amount of profit of the ponds will be available once the results of the latest harvest are complete. We do know that last year Rishi Ram Sharma's pond, with only 1/2 of the normal growing season and during his first year as an aquaculture farmer, produced 40 Kg. of fish. This would amount to Rs.1,600 in sales if he sold all of the fish. They did not take into account their operating costs (financial management must be included any small scale enterprise training). It will take approximately 4 - 5 years before investments are recovered and a real profit is realized according to the feasibility studies done by HMG. This analysis is based on an annual harvest of approximately 160 kg. at Rs.40/kg.

The technology is appropriate; the nutritional value is known to the villagers and they love the taste of fish. Fingerlings are easily available and affordable until the farmers of Deurali begin to raise their own (according to last years prices, a one ropani pond can be stocked for approximately Rs.75.00. Sales of Rs.5,000, in ideal conditions, can be realized from this amount of fingerlings). The program seems to have all the necessary components for replication and sustainability. But, close monitoring is still essential to insure that the program reaches its full potential.

Save The Children has only touched the surface of a program that will be beneficial to and sustainable by the farmers of Gorkna. Once this core group of farmers are trained to a sufficient degree and the technical skills are in the community itself, the project can be replicated with little outside assistance.

**SECTION THREE:**

**EVALUATION OF THE COLLABORATIVE MANAGEMENT  
METHODOLOGY**

A questionnaire with eight questions was given to WHAF's Advisory Council for response. The Council were encouraged to confer with other colleagues from their respective organizations who had any background with the project since its inception. The answers which follow have been collated question by question.

*1. WHAP is managed collaboratively. Major policy decisions are made by a council of participant representatives; the project holder is responsible for fiscal management, analytical reporting, and communications; the technical coordinator is responsible for content and delivery of technical assistance and training in the areas of water harvesting, aquaculture and integrated agriculture; and the project implementors are responsible for accessing and applying the technical and training assistance available to field projects. How effective is this system as a mechanism for collaboration between university staff and PVO field staff and what might be done to improve the performance of this mechanism?*

"The system as a whole has been an effective mechanism for transferring skills from Auburn personnel to field staff. regarding other goals, such as continuation of the project or getting aquaculture skills passed on to trainers who can insure continued spreading of the skills within [our organization], the system has been less successful. The system could have perhaps achieved these goals if the PVOs' trainers--and informal, participative training techniques--were more fully incorporated into the program design.

One other goal was to demonstrate the validity of aquaculture as a central component in agricultural development. This was never pursued as much as it could have been. Some [of our] projects, such as in Zimbabwe and, especially, Nepal, did demonstrate this effect. However, somewhere along the line, this goal was subordinated to the very worthwhile goal of getting aquaculture skills to farmers and PVO staff.

One reason the 'central component' goal fell by the wayside might be that the Advisory Council failed to put enough effort into its oversight duties. Advisory Council members seem to have viewed the project as a very minor part of their Agriculture/Natural Resources 'portfolio.' Attention from Council members could have been increased with more project support building on the 'central component' idea with Advisory Council on-site evaluation."

"The management technique and collaborative decision-making worked well. If we could encourage broader university participation in cases where expertise exists in more than one member, this could, and should be, of benefit to the universities in sharing knowledge and to PVOs in being aware of options/choices."

"The system was suitable for this project and for any start-up activity. However, the ultimate goal should be for basically bi-lateral relations between PVOs and universities with only occasional joint meetings to coordinate training activities, evaluations, etc."

"The mechanism is effective because the technical assistance can be tailored to specifically meet the needs of the PVO. The technical advisors also earn insights into how the specific projects fit into a country context much quicker because of the orientation provided by the PVO staff. In this way, technical assistance can be more responsive and undertaken often within a short timeframe. Collaboration will be more effective when PVOs program water harvesting/aquaculture into regional or country plans and if the university can be involved in assisting the development of such plan."

"This system has been highly effective as a mechanism for collaboration between university and PVO staff. Our PVO staff and partners in Indonesia and Thailand simply had access to technical services of which they would normally not have been able to avail themselves. In the cases of Indonesia and Thailand, relationships between the field and Auburn were encouraged and developed by us. There was ample flexibility on the parts of the Center and the ICA, which enabled the programs to proceed smoothly despite the typical delays and frustrations involved in program work in developing nations.

The collaborative management idea works well because the PVOs have the contacts and relationships established, and can facilitate the entrance and subsequent assistance by the university. Each part of the management team contributed what they could to the overall effort. The breakdown of responsibilities fell objectively to the partner that was best suited to each task.

This mechanism was very successful and perhaps could only be improved significantly by increased input from the PVOs. The PVO representatives typically travel often and it is difficult to assemble as a group. Systems for improving PVO contributions toward and input in this collaborative program should enhance its success in the future."

"The collaborative management structure used under WHAP has been quite effective. One of its positive features is that it assures effective provision of technical assistance and training to the field and effective management and required reporting of project activities to A.I.D., while allowing each PVO in the WHAP group to maintain their own funding and implementation systems of WHAP-related activities. Another positive feature is that this collaborative system has provided an opportunity to share experiences and ideas across the PVOs and university staff on not only water harvesting and aquaculture, but on development approaches and management as well. Further, this structure is successful from [our] point of view because it utilizes our organization where it is strongest. Namely, the field level implementation and oversight of projects. As we do not have much of the technical expertise in-house for doing water harvesting and aquaculture projects, it is good to have Auburn handling this area. Further, having the PVO/University Center to handle the administrative aspects of the project makes it much more attractive."

*2. As a result of WHAP a rapport between the participating PVOs and Auburn University has developed, the PVOs have gained a greater understanding of water harvesting/aquaculture technology, and Auburn has come to appreciate the diverse methods by which PVOs operate. What is the probability of Auburn continuing to supply some type of technical assistance to the participating PVOs upon completion of WHAP, and what can be or could have been done to increase the probability of sustaining that relationship?*

"The probability of [our organization] contracting with Auburn independent of outside funding is unlikely in the next few months. This is certainly not due to any problem with the technical ability of Auburn staff. Rather other priorities are taking Agriculture/Natural Resources funds. As noted above, continuing the relationship could have had more likelihood if trainings had been integrated more closely with the training structure of the PVOs so that the impact could be spread more widely."

"This relates to my answer above. While the excellent rapport with Auburn is to be continually cultivated, I believe we need to encourage more universities to participate with the same level of commitment, interest, and support shown by Auburn. Perhaps this is the expertise they have and can use to help get other universities to be more active. The seminar on Africa [a seminar sponsored by the PVO/University Center which was not related to WHAP] seemed to be a take-off point in this when task groups were formed with PVOs/universities selecting."

"In the case of [our organization], the probability is not too great. This is primarily due to the fact that [our organization] did not embrace water harvesting to the extent envisioned at the commencement of the project. There are basically three determinants in whether a PVO adopts a specific development approach: 1) a demonstrated need for the intervention, 2) possession of or access to technical expertise, and 3) donor support. The third determinant was missing in this project. [Our organization]'s highly successful sectoral intervention in agro-forestry was supported by an AID grant which not only supported strengthening the organization's expertise in this sector but also provided project funds."

"As mentioned in Point 1, the involvement of Auburn in PVO design of strategies in specific areas would help. The major limiting factor is providing resources for outside technical assistance. The Auburn alumni overseas must become more involved through possible short-term consultancies to provide appropriate training at the farmer level."

"It is definite that Auburn University will continue its relationship with [our organization] through support of our programs in Indonesia and Thailand. The Indonesia project holder also relates directly with Auburn. As to providing technical assistance to [our] projects in the future, it is highly probable Auburn will be asked to do so. It is difficult to ascertain what could be further done to enhance the probability of sustaining a relationship with Auburn. The

Auburn staff have been highly professional, technically competent and culturally sensitive in their assistance to [our] partners in Africa and Asia."

"As our field offices are responsible for developing project proposals, [our] continued utilization of Auburn for technical assistance is dependent upon their willingness to continue working in the area of water harvesting/aquaculture. It would also be dependent upon how equipped our field offices feel they are to continue this type of work. If they feel that they have developed an adequate expertise, they would probably only utilize Auburn if specific problems arise. The likelihood of sustaining the relationship would probably increase if Auburn were to remain in contact with our local offices that have done water harvesting/aquaculture projects and keep them abreast of new developments in the technology.

Other suggested activities that can or could have been done to sustain the Auburn-PVO relationship include: Further subregional orientation training of PVO field staff. In this way, the knowledge and possibilities of water harvesting and aquaculture will get to those key PVO individuals who work directly with the counterparts and help formalize projects. Further training of PVO counterparts (along the lines of CRS' two water harvesting/aquaculture workshops in India), as these are the ones who identify the needs and possible solutions and formalize project activity. Provide training to the technical staff at each PVO to instill awareness of water harvesting/aquaculture and their development applications, as this group can have an impact on project/program development. The administration staff (i.e. Desk Offices at Headquarters) do not have as much time to consider and promote technical aspects of projects. In all three training programs above and in any other training provided, emphasis should be made on how water harvesting and aquaculture can be used as a means (a tool) for standard development activities (i.e. agriculture, irrigation, potable water, income generation, health, forestation, etc.). Water harvesting may have a greater appeal among PVOs if PVO and counterpart staff understand and appreciate that these activities have various useful developmental application."

***3. Utilizing the system of communications established in WHAP, were needs met in a timely and appropriate fashion and how could the system of communication be improved?***

"Needs were met in a timely fashion. The direct communication between Auburn and [our organization] was the key to this."

"I received reports from Auburn, but not from the field staff. Only in face to face conversation did I learn of some differences of opinion, and these related to program direction and emphasis. The fault lay, thus, in agency communication failure, not WHAP."

"System was adequate since communications concerning technical assistance were directly between [our organization] and Auburn."

"When I worked on the program, communications were great and response time very prompt. The only conceivable way that the communications could have improved would be to establish the coordination unit at the same university which provides technical assistance. Of course, this solution would be obviated by the inclusion of more than one technical assistance university."

"Most needs were met utilizing the system of communications established in WHAP. Problems only seemed to arise when a single PVO council member was absent on a trip and no one could respond in his absence."

"In our experience the system of communication established by WHAP met all of the needs in a timely and appropriate fashion. Accordingly, we have no recommendations for improvement"

***4. What role did the Center for PVO/University Collaboration in Development play in the project?***

"The Center facilitated technical assistance very well, but this function was a bit expensive. Though it was not the Center's function, the Center did not sufficiently enlist PVO expertise in training and integrated agricultural development. As noted in the answer to question 1, this could well be seen as the PVOs' responsibility."

"A critical role. They provided the staff expertise to manage what could have been an unproductive gathering of

separate PVOs and universities, seeming to be ready to cooperate, but needing careful stroking, guidance, encouragement, and from time to time, read the riot act. They gave A.I.D. a high value product for low cost."

"Center played a coordinator role--calling meetings, arranging joint trainings activities, etc. It kept things going."

"1. Created the mechanism for collaboration. 2. Coordinated in all the diverse activities among diverse groups. 3. Assured that people were kept informed of developments and activities. 4. Facilitated problem solving."

"The Center played a pivotal role in the project. They were the communications center for management of the program. The Center established and facilitated all the relationships established through WHAP."

"The Center played an essential role in the project by: Maintaining liaison between the PVO/University members and the project's funder, A.I.D. It kept A.I.D. abreast of project progress and issues, and kept the PVO/University members abreast of A.I.D.'s needs and concerns. Managed the projects' funds and submitted the required narrative/financial project reports. Providing the overall direction and momentum of the program. Facilitated/organized coordination among PVOs and university members, including calling meetings to conduct project business, to ensure focus on project goals, and to assess project progress."

***5. What were the advantages and disadvantages, if any, of having the Center for PVO/University Collaboration in Development facilitate and administer WHAP and what contribution did its participation make to the achievement of project goals?***

"The key advantage was having a neutral party to help in fund disbursement. The key disadvantage was that the Center was not well-positioned to mobilize PVO training and integrated development ("central component") perspectives for the benefit of the project. It may well be necessary to house such a function in a PVO which acts as lead member of a PVO/University consortium."

"The advantage was their ability to keep things going and moving on track. The disadvantage was the travel distance, and airlines cost which the Center could not control. It was an advantage to have a university location [western Carolina University], however, for facilities and support structures as well as good breather atmosphere where brainstorming was de rigueur."

"The Center, in my opinion, played a role prescribed by the participating PVOs. This responsiveness to PVO needs enhanced the Center's role. Ironically, the Center's early-on insistence on an elaborate evaluation of water harvesting/aquaculture as a core intervention provided, to a certain extent, an opportunity for the PVOs to establish a cohesiveness in their opposition to the evaluation."

"The Center created the mechanism for collaboration in this type of program. Without the experts of the Center, the collaboration would never have taken place. Coordination and collaboration at the levels achieved in this project are almost impossible to achieve without a catalyst in spite of the rhetoric of most institutions regarding their commitment to collaboration. The disadvantage may be that the role of the Center may diminish once the collaboration becomes institutionalized. As mentioned above, more efficiency could be gained if the Center operates in the same university as the technical assistance."

"There were no real disadvantages. The advantages, as mentioned in item 4, were that it facilitated the whole process of the WHAP project."

"In order to make Auburn University's services available to a number of PVOs, a coordinating body (not related to either the PVOs or Auburn) was needed to assure that the services are provided adequately to the diverse PVOs. The Center served this role very well."

The advantages of having the Center facilitate and administer the program are two-fold: Having a third body conduct these essential tasks ensured that Auburn's services would be provided to a number of PVOs. Having a third body to conduct the administrative and reporting functions to AID allowed each PVO to maintain their diverse management systems and not have to adopt special systems for the WHAP activities only. Further it allowed AID to have only one point of contact for the grant rather than one for each PVO."

**6. What are the advantages, if any, of accessing technical assistance as was done in WHAP as compared to other means you may have used in the past?**

"You had the added insights and evaluation of feasibility from the other PVO colleagues and the Center as well as AID. We do need however, to be sure all choices have been presented."

"The primary advantage is cost--it was free. Second was the continuity which Auburn provided along with the high quality of their technical assistance, and third was the understanding which Auburn gained of PVO operation."

"1. Lower cost, higher quality technical assistance. 2. More responsive to needs of PVO." 3. Provided important continuity and thus a good learning experience for both the university and the PVOs. 4. Technical assistance had longer term vision - led to better commitment."

"The advantage of accessing technical assistance as we did through WHAP was that we were able to define the needs, and the technical experts (Auburn) were able to access the correct person for the task! This left that important decision to those who could best make it, at least on a technical basis."

"Having consistent, reliable, responsive and easily accessible technical assistance was the key advantage. Finding the right technical training specialist--usually such a difficult task--was made simple by WHAP. We also learned from the experience and have been able to design similar PVO-University consortia to achieve cost-effective training which assures incorporation of PVO training needs and integrated development perspectives."

"The most obvious advantage was that the expertise to be drawn upon was clearly identified and could be accessed much more easily than finding an independent consultant with the equivalent skills. Further, the technical assistance provided by Auburn was well integrated, being able to supply information on hydrology and water harvesting as well as aquaculture and forestry. This was clearly more advantageous than finding two or three different consultants, each not knowing what the other was doing. Further, the cost saving to our field office made a significant difference in deciding whether or not to utilize a WHAP consultant."

"As [we] had not made a practice of obtaining outside technical assistance on a regular basis, largely due to costs, the WHAP project presented a good opportunity for tapping this resource. Had the local offices been responsible for all the costs of the consultancies, they would probably have utilized them less and accordingly the projects may have suffered. However, the fact that the field offices did share in the cost would insure that they really did need the consultancy."

**7. What was the estimated cost of participating in this project to your agency; i.e. 1) attendance at Advisory Council meetings, 2) expenses incurred for regional trainings, 3) expenses borne for the in-country costs of a WHAP technical consultancy?**

*(Editor's Note: As Council representatives had no actual records for supplying this information, we have included only two responses here which best sum up the responses as a whole.)*

"Cost to field offices are impossible to easily reconstruct and would, in any case, be only a rough estimate. We should have established a system so that PVOs could keep track of such expenses."

"Do not have data to answer this question. I can easily venture that the benefits received far outweighed the costs."

**8. With respect to the reporting requirements of WHAP:**

- 1) How easy or difficult was it to collect the necessary information?**
- 2) By what system was this information collected and transmitted to the Center for PVO/University Collaboration in Development?**

"Reporting requirements (auto-evaluations and Auburn evaluations for the sub-grants) were very simple and easy."

"1) Most difficulty existed internally in our agency. 2) Letter, personal interview, telephone."

"1) Somewhat difficult, but normal for this field. 2) From our missions through our New York-based regional units then through our representative on the Advisory Council."

"Cannot answer this because of my time away from the project. At first, the evaluation requirements were to be onerous with project activities treated more as research rather than development projects. When I left we were modifying these procedures for simplification. I note this has occurred."

"1) The information was all relatively easy to collect. 2) This information was collected by using [our] existing reports and additional letters, and during visits."

"1) It was difficult for [headquarters] to collect, in a timely manner, the information required of the field offices. However, this is often the case with all of our projects when it comes to reporting and evaluation information. In general, it is difficult to get our field offices to keep up with reporting requirements on projects due to staffing constraints and the view that it is more important to develop new projects and make sure that projects are running smoothly than write reports for NY on time."

"2) Depending on the information needed, it was either generated by our field office or by the organization implementing the project. The information was gathered from our field offices by the NY regional office handling that country (Africa, Eurasia or Latin America). The information was then passed on to the WHAP coordinator within the agency and then to either the Center or Auburn."

**ATTACHMENT: SCOPE OF WORK FOR FINAL EVALUATION**

## SCOPE OF WORK

### ARTICLE I - TITLE

Participants' Evaluation of the Water Harvesting/Aquaculture Project (WHAP)--Cooperative Agreement No. PDC-0204-G-SS-4085-00

### ARTICLE II - BACKGROUND

The Water Harvesting/Aquaculture Project is an AID funded effort developed as a five year project. At the end of the first three years the project was evaluated by AID and approved for two more years of funding. As a result of that evaluation, the evaluation component of the WHAP budget was eliminated. At that point the Advisory Council, comprised of representatives of the organizations participating in the project, elected to conduct their own evaluation of field projects. They decided to extend the concept of project collaboration one step further by forming evaluation teams comprised of at least one representative from a neighboring PVO WHAP project.

### ARTICLE III - GOALS OF THE FINAL EVALUATION

The major objective of the final evaluation is to assess progress from the point of view of the participants toward stated project goals and purposes as a basis for decisions concerning: a) the value of the introduction of water harvesting and integrated agri/aquaculture as a new technology for PVOs; b) the value of the technology to the intended beneficiaries, c) the value of the collaborative methodology to the PVO and university participants, and d) future funding to include other strategies and additional technologies. This evaluation will also inherently test the feasibility of collaborative self-evaluation.

The goal and purposes of the Water Harvesting/Aquaculture Project are:

#### Project Goal

The ultimate goal of the project is to improve the quality of rural life in selected developing countries through the introduction of improved technology in ways that will match local capacity for development to community needs and potentials.

#### Project Purposes

The purpose of the project is twofold. First, it will foster the design and implementation of a series of PVO-sponsored field projects in a variety of countries and rural settings. These field projects will be directed toward the collection of run-off water into small ponds and the introduction and support of fish production at the community level, bringing much needed protein to the beneficiaries' diets and possibly added income. Water harvested may also be used for any number of other activities which

may include household use, stock watering, and garden irrigation. The second purpose of the project is to develop a collaborative management methodology involving universities and PVOs. This will also be evaluated.

The principal users of the evaluation findings and recommendations will be the project participants; however, it is hoped that the evaluation will influence AID project managers and other funding agencies in their decisions to fund future collaborative projects.

#### ARTICLE IV - DESCRIPTION OF EVALUATION ACTIVITIES

There will be two types of evaluations. The Joint Center will ask each member of the Advisory Council to interview appropriate headquarters and field staff for their viewpoints on the collaborative management methodology. Secondly, field projects will be evaluated using the evaluation procedures of the sponsoring PVO. The innovative aspect of this evaluation will be that a representative from another PVO, involved in a WHAP project within the area, will also participate.

#### ARTICLE V - CRITERIA FOR FIELD PROJECT SELECTION

A project must meet several criteria in order to be included in the evaluation. It must: 1) have reached Stage 4 of the "Stages of Development" as outlined in the current Workplan; 2) be willing to undergo a collaborative evaluation; 3) be reasonably near another PVO WHAP project which is willing to provide an evaluation team member; 4) have the organizational capacity to conduct the evaluation before May 1989; and 5) be included in the list of projects of primary focus as listed in the current Workplan.

#### ARTICLE VI - COLLABORATIVE MANAGEMENT METHODOLOGY EVALUATION

Evaluating the management methodology will be conducted by questioning participant representatives to the Advisory Council. It is they who have been intimately involved in the project management. The Council will be asked to address the list of key issues which follow by interviewing headquarters and field staff who have knowledge pertinent to how the project has been managed.

##### Key Issues

- What progress has been made in establishing mechanisms necessary for collaboration between university staff and PVO field staff and what might be done to improve the performance of this mechanism?
- Given progress and costs to date, how likely is that the mechanisms for providing this type of collaborative assistance will be sustainable upon completion of WHAP, and what can be done to increase the probability of sustainability?
- Was communication a problem using this method of project management, i.e. were needs met in a timely and appropriate fashion and how could the system of communication be improved?

- What was the contribution of the Joint Center to the project and was its participation necessary to the project's success?
- What were the advantages and disadvantages of having the Joint Center facilitate and administer WHAP?
- What are the advantages of providing technical assistance to PVOs through these mechanisms as compared to more typical strategies for providing assistance?
- What was the dollar cost of this project to the PVO involved?
- How were the reporting requirements of the field projects fulfilled, who was responsible for reporting to the Joint Center, and how easy or difficult was it to collect necessary information?

## ARTICLE VII - FIELD PROJECT EVALUATION

A list of key issues to be addressed in the field project evaluations is also included below. The Council is not responsible for planning the actual procedures involved, in fact, a major goal of this evaluation is the cross-fertilization that will occur among PVOs when they conduct the host PVO's standard evaluation as a team.

Auburn and the Joint Center will compile and provide summaries of monitoring information relevant to projects to be evaluated to include: person days of WHAP consultant visits to this project, number of staff trained by WHAP and depth of training, a variety of project outputs, along with any project support funds granted. To a large extent, the goal of the evaluation will be to verify the monitoring information. A small amount of funds is available to cover visiting PVO staff's travel costs if necessary.

### Key Issues

- a) Utility of the Technical Assistance to PVOs and Rural Villagers
  - What evidence is there that the technical assistance and training provided through WHAP is directly useful to the participating PVOs - for example, is the assistance oriented to the practical needs of PVO field staff and counterparts; are the types of interventions suggested by the technical advisors feasible in light of PVO budgets and technical capabilities; are these interventions adapted or consistent with the social and cultural systems of the client communities with which the PVOs work?
  - What evidence is there that the WHAP strategies as applied by the PVOs have benefitted the target population, and that the benefits from the interventions will be realized equitably across the community (e.g., men and women both benefit from and contribute to the activity)?

b) Monitoring Methods

- How practical is the progress reporting system which was simplified in the second phase of the project--how well does the methodology work, is the system responsive to the needs and capabilities of those who are supposed to use it, and what alternative approaches might be preferable?

c) Sustainability of Intervention

- What evidence is there that the water harvesting and aquaculture activities established at this site will continue once the PVOs leave?

d) Economic Benefit Rate of Return

- How many people were impacted by this project and what impact did it have on their food security?
- What economic value, if any, has been derived from this project by the beneficiaries?
- What did the beneficiaries have to spend to become involved in this project, and afterwards, to sustain it?

ARTICLE VIII - REPORTING REQUIREMENTS

Information collected will be reviewed by appropriate PVOs and passed on to the Joint Center. The Joint Center will draft a summary report to submit to the participants for review. The revised report as approved by the participants will be submitted to AID by July 30, 1989. The final report will include as appendices a scope of work for the evaluation, a list of individuals interviewed, and a description of the evaluation methods and procedures followed. Findings will be shared with all participants for mutual learning.