

# THE USAID/PANAMA MANAGEMENT OF NATURAL RESOURCES PROJECT (MARENA): AN EVALUATION REPORT

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*Submitted to:*

**USAID/Panama**

*Under:*

**The Evaluation IQC AEP-I-00-00-00023-00  
(RFTOP No. 525-03-P-008)**

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**April 21, 2003**

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## TABLE OF CONTENTS

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List of Acronyms .....	ii
Executive Summary .....	iii
<b>Section I. Introduction .....</b>	<b>1</b>
A. Purpose and Scope of the Evaluation.....	1
B. Evaluation Methodology.....	1
C. Report Structure .....	2
<b>Section II. Background Information and Setting Overview .....</b>	<b>3</b>
A. The USAID/Panama Watershed Management Project.....	3
B. The Panama Canal Watershed .....	4
C. Institutions in the Panama Canal Watershed .....	6
<b>Section III. MARENA Project and Evaluation Findings.....</b>	<b>9</b>
A. Summary of MARENA .....	9
B. Analytical Assessment of MARENA Project Components.....	10
Component 1: Panama Canal Watershed Management.....	10
Component 2: National Parks and Wildlands .....	13
Review of Component 3: Conservation Foundation.....	19
Review of Component 4: Other Direct Costs .....	22
C. Overview of the Proposed and Actual End of Project Status Indicators .....	23
<b>Section IV. Responses to Scope of Work Questions.....</b>	<b>24</b>
<b>Section V. Conclusions .....</b>	<b>26</b>
<b>Section VI. Lessons Learned.....</b>	<b>28</b>
<b>Section VII. Recommended Approaches .....</b>	<b>32</b>
<b>ATTACHMENTS</b>	
1. Bibliography .....	1-1
2. List of Individuals Contacted.....	2-1
3. The Relationship Between Poverty and Protected Areas .....	3-1
4. Relationships Between Poverty and Protected Areas within the Panama Canal Watersheet.....	4-1
5. FIDECO Projects Completed 1996-2002 .....	5-1
6. Survey of FIDECO Participants in Trinidad Agroforestry Project.....	6-1

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## LIST OF ACRONYMS

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ACP	Panama Canal Authority (Autoridad del Canal de Panama)
AED	The Academy for Educational Development
ANAM	National Environmental Authority
ANCON	Asociación Nacional de Conservación
ARI	Autoridad de la Región Inter-Oceánica
CICA	Centro Internacional para la Capacitación Ambiental
CICH	Comisión Inter-Institucional para la Cuenca Hidrográfico
FHIA	Fundación de Honduras de Investigación Agrícola
FIDECO	Conservation Trust Fund
IDB	International Development Bank
INRENARE	National Institute for Renewable Natural Resources
LOP	Life of Project
MARENA	Management of Natural Resources Project
MASAR	Programa de Manejo Sostenible de las Areas rurales de la Cuenca Hidrográfica del Canal de Panamá
MIDA	Ministry of Agricultural Development
MIPPE	Ministry of Planning
NATURA	Conservation Foundation
PACD	Project Agreed Completion Data
PAN	Programa Ambiental Nacional
PASA	Participating Service Agreement
PCW	Panamá Canal Watershed
RENARE	General Directorate for Renewable Natural Resources
STRI	Smithsonian Tropical Research Institute
TNC	The Nature Conservancy
USFS	U.S. Foreign Service
USAID	United States Agency for International Development

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## EXECUTIVE SUMMARY

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### EVALUATION PURPOSE AND SCOPE

MARENA (Management of Natural Resources Project) was USAID/Panama's principal natural resource management project between 1991 and 2002. This evaluation of MARENA first sums up its major accomplishments, identifies its principal difficulties, and distills its most important lessons. It then makes recommendations to USAID/Panama for the future strategic directions of its support to Panama's environmental and natural resources sector.

### EVALUATION METHODOLOGY

The evaluation team was in Panama from January 5 to February 11, 2003. In order to collect data and viewpoints about MARENA, the evaluation team reviewed MARENA project documents, interviewed officials of USAID/Panama, Government of Panama institutions and environmental NGOs, and made field observations in and around ten national protected areas. The evaluation team submitted a draft report to USAID/Panama and then incorporated comments into a final version of the evaluation report.

### PROJECT COMPONENTS AND BUDGET

MARENA's design derived from the USAID/Panama financed Watershed Management Project, implemented in the 1980's. MARENA's purpose was to protect and manage Panama's renewable natural resources, with particular emphasis on the Canal Watershed. MARENA had three components: Panama Canal Watershed; National Parks and Wildlands Management; and Institutional Strengthening. Although originally national in scope, in 1993 MARENA was largely restricted to the Panama Canal Watershed.

The National Institute for Natural Resources (INRENARE) was the original GOP counterpart institution. In 1997, ANAM replaced INRENARE. The original Project Action Completion Date (PACD) was 1998. This date was extended several times and now is 2006. In fact, however, MARENA ended on December 31, 2002. USAID/Panama eventually obligated US\$23,254,486 with MARENA, US\$5,254,486 more than initially planned. The GOP and the TNC contributions to the MARENA Project Budget remained unchanged so the total project budget was US\$46,428,486.

### PRINCIPAL EVALUATION CONCLUSIONS

Although originally designed to be national in scope, USAID/Panama in fact restricted MARENA's activities almost entirely to the Panama Canal Watershed. Otherwise, the principal differences between the project design and the implementation resulted from changes in the counterpart Panamanian institutions. A principal institutional modification was that the Panama Canal Authority (ACP), and the Inter-Institutional Commission for the Watershed (CICH), rather than INRENARE, were assigned legal responsibility for coordinating the management of the Panama Canal Watershed. The other major institutional change was the absorption of INRENARE by the National Environmental Authority (ANAM).

The seven End-of-Project Status indicators were only partially achieved and threats to the ecological integrity of the national system of protected areas, both within and outside of the Panama Canal Watershed, remain. The long-term status of the public lands on the west side of the Panama Canal that have reverted to the Government of Panama, and largely remain under forest cover, remains to be determined. The forest protects both extremely important reserves of biological diversity and the quality of the water entering the lakes and rivers of the Panama Canal Watershed. Although initiating its coordinating function the Inter Institutional Commission for the Water Basin (CICH) is not yet fully functional. The National System of Protected Areas is unable to function efficiently due to administrative weaknesses, corruption, political influence and inadequate budgets.

MARENA's principal accomplishment was to provide technical and financial support to Panama to establish a government presence, through the construction of basic infrastructure and stationing of park guards, in the protected areas of the Panama Canal Watershed during the period of reversion of Canal Zone, when there were many threats to its ecological integrity. A second significant accomplishment was the establishment of a monitoring system for the ecological and social parameters of the Panama Canal Watershed. The system has provided a sounder basis than previously existed for determining effective watershed management policies and practices. A third accomplishment was the creation of an environmental trust fund (FIDECO). FIDECO assures a minimum level of financing for the operation of the National System of Protected Areas and provides grants that permit local environmental NGOs and communities to carry out short-term field activities with rural people who live near to national protected areas.

The principal problem encountered during project implementation stemmed from inability or reluctance of the GOP to assign sufficient financial resources to the task of protecting, managing and rehabilitating the Panama Canal Watershed. The GOP does not yet consider the protection and management of the Panama Canal Watershed as part of the cost of providing water for the operation of the Panama Canal, for human consumption, for industrial production and for generation of hydroelectricity. Watershed protection and management thus is severely under-financed. The politically and financially powerful Panama Canal Authority, for example, spends nearly US\$100 million per year in maintaining and improving its canal infrastructure. Yet it provides no funding to the national protected areas within the Panama Canal Watershed, even though their natural vegetation maintains the high quality and stable flow of the canal's water supply. Likewise, watershed management and protection are not considered in the cost structures of the Panamanian institutions that supply water for industrial and domestic purposes within the Trans Isthmus Corridor. To adequately finance the protection and management of the Panama Canal Watershed, the costs of doing so should be included in the cost structure of the institutions that utilize or distribute its water.

The creation of the National Environmental Authority (ANAM) significantly weakened Panama's institutional structure for the management of its National System of Protected Areas. ANAM's creation has resulted in reduced financing for the protected areas, political influence in management decisions and personnel selection, inefficiencies in day-to-day operations and decision making, and loss of a high percentage of its best-trained protected area staff. Consequently, the institutional and financial basis for the management of the national protected areas is weaker in 2003 than it was in 1991. There is little chance that these institutional weaknesses can be corrected within the present structure of ANAM. A necessary condition for

the National System of Protected Areas to become an efficient, low-cost, technically oriented institution is its independence from ANAM's regional administrations.

The principal contribution that MARENA made to the Mission's PCW SO was to provide the means for the GOP to establish a presence in the Panama Canal Watershed protected areas. This presence reduced the extent and intensity of elimination or degradation of natural forest within the watershed during the period of reversion of the Panama Canal Zone from the United States to Panama and thus contributed to the sustainable management of the canal watershed.

Although initially MARENA assisted INRENARE to become a more effective institution, in 1998 the creation of ANAM to some extent negated the institutional strengthening that had occurred since 1991. By contrast, the FIDECO trust fund established by MARENA has stimulated the formation of a wide variety of local environmental NGOs and given their members and staff opportunities to apply their professional expertise to specific local environmental and natural resource problems. Some rural populations have benefited from the FIDECO trust fund through increased incomes from daily wages and through taking advantage in various ways of better links to outside institutions. There is no clear evidence, however, that the income of rural populations has increased significantly due to the projects financed with FIDECO funds.

The most successful component of the MARENA design has been the financing and operation of the FIDECO trust fund. FIDECO's interest income is far too small, however, to finance activities of a scope and length sufficient to make a significant impact on Panama's environmental and natural resource problems. The principal weakness of MARENA was its reliance on public sector financing for the personnel and operations of the National System of Protected Areas, which proved to be less than planned for in the project design.

The interest and participation of communities in natural resource and environmental management and protection activities has made possible the operation of the NGO component of the FIDECO trust fund. Overall NGO participation in MARENA was very effective. Fundación Natura has been the key institution in the establishment and operation of the FIDECO trust fund. Local environmental NGOs have planned and implemented many innovative, successful local projects to protect natural resources and the environment. The field staff of the national protected areas has also been effective participants in MARENA. It formed the institutional basis for protecting large areas of natural forest from conversion or degradation. Additional and longer-term financing is required to make the activities of the communities, NGOs and public sector more effective. The effectiveness of NGOs could also be improved through their acquisition of greater technical knowledge, especially regarding forestry and agricultural practices applicable to specific sites.

## **LESSONS LEARNED**

USAID/Panama funds for protected areas should be directed to and through public and private institutions that have the structures required to support their technically competent, non-political administration. MARENA's experience indicates that national protected areas can become an effective component of watershed protection and management if adequate institutions are established and financed. However, if institutional structures themselves limit effective action, then external financing may not produce increased levels of protection and management in

protected areas. Without an effective institutional structure, external funds begin to produce redundant planning documents and technical reports rather than permanent, replicable results in park protection and management that conserve the environment and natural resources while improving people's lives.

## **MANAGEMENT OF THE CANAL WATERSHED**

The management of the Panama Canal Watershed will be decisive in the success or failure of natural resource and environmental management at the national level. MARENA's experience shows that the resolution of Panama's environmental and natural resource problems nationally requires successful protection and management of the Panama Canal Watershed. If Panama can protect and manage the Panama Canal Watershed then it will have the basis to protect and manage its environment and natural resources nationally. If Panama fails to protect and manage the Panama Canal Watershed in spite of the financial and technical resources that are or could be made available, then it is unlikely that it will be able soon to reverse the deterioration of natural resources and the environment nationally. Thus the Panama Canal Watershed serves as the laboratory for testing the technical, administrative and financial requirements for effective natural resource and environmental protection and management in all of Panama.

Inextricable links exist between national protected areas and surrounding privately owned land. These links make it advisable to support concurrent, focused, technically sound and coordinated actions to protect and manage natural resources and environment inside and outside of the national protected areas. MARENA's experience has demonstrated that while protected areas may be a useful, sometimes even an essential, component of protecting and managing a watershed, they are neither sufficient in themselves nor are isolated from the private lands that surround them. Protection and management of the natural resources and environment in a watershed therefore, requires that effective measures be taken to improve land use practices on private lands. Otherwise, the deterioration of the natural resources and environment on private land may negate the environmental benefits that result from protecting and managing the protected areas. Moreover, it will prove difficult to maintain the integrity of a protected area in Panama, where the rural population depends at least partly on agriculture, if the agricultural productivity of the surrounding private lands deteriorates. A growing population will demand access to the fertility of the forest soils within the protected areas.

International economic trends have a predominate influence on Panama's natural resources and environment. The 1999 STRI study indicated that there is a strong trend towards the abandonment of pastureland in the Panama Canal watershed since national policies removed protection for domestic production of cattle products. Panama cattle producers cannot produce beef so cheaply as their competitors in other Central American countries. Field observations confirm that the watershed has a large proportion of abandoned pastures covered with natural regeneration of native species. Measures to protect and manage Panama's natural resources and environment will be futile unless they are designed within the context of such international economic trends. This lesson derives special importance given the eminent establishment of the hemispheric free trade zone.

## **NEED FOR HIGH STANDARDS**

The results of the MARENA financed field projects, however, demonstrate that no matter how small a project may be in financial terms, time period, or geographic area, it should be carried out in such a way as to assure the highest technical standards. Projects serve no purpose if they fail because of poor technical supervision. In such instances, the "beneficiaries" waste their time and become disillusioned, funds are wasted, protection of natural resources and the environment is not achieved, and technical knowledge is not gained.

MARENA's experience with FIDECO projects also indicate that these projects should be designed and selected based on criteria that ensure clear links with specific objectives related to the protection and management of a watershed. The very limited financing available to FIDECO for projects and the small size and limited duration of the projects mean that they will only be significant if they are focused on a common objective. Given the restricted funding available to parks, it makes sense for the FIDECO projects to focus on the resolution of problems that threaten the integrity of the parks. Otherwise, the FIDECO projects become simply an uncoordinated, unfocused collection of small activities that respond more to the particular interests of NGOs or communities than to an overall strategy.

USAID/Panama could play an important role in assisting Panama to protect and manage its natural resources and environment by developing a focused, coherent program with clear objectives and adequate technical oversight. The MARENA experience demonstrates that USAID/Panama has latent possibilities for playing an influential, central role in improving Panama's ability to protect and manage its natural resources and environment. Panama has internationally significant water and biological resources. It has welcomed international assistance in establishing the institutional, financial and technical basis for their protection and management. USAID/Panama has the ability to bring a wealth of domestic and international experience to bear on the resolution of the obstacles to such protection and management.

## **RECOMMENDATIONS**

The evaluation team recommends that USAID/Panama support strategic policy, planning, and program interventions to stimulate more favorable enabling policies for aggressive and sustainable change in watershed protection and management. This type of support could include support for updating land use policies for the Panama Canal Watershed through a revision of the requirements of Law 21. Likewise, USAID/Panama could assist Panama to rethink the "buffer zone" strategy that was promoted by MARENA with the objective of introducing more market driven and technically sound projects. A third possibility for USAID/Panama support would be assistance to the Plan Panama Rural strategic planning effort, as means to help Panama's rural economy to adjust to the changes that will result from the Free Trade of the America Zone. USAID/Panama could also support applied research through financing the establishment in CICH of an Environmental Information Center to monitor conditions throughout the Panama Canal Watershed.

The evaluation team recommends that USAID/Panama develop creative institutional support strategies to improve coordination requirements and operational performance within the Panamanian institutions responsible for natural resource protection and management.

Institutional efficiencies and operational effectiveness have become increasingly important, as broader environmental issues must be addressed. For example, USAID/Panama could provide technical assistance to CICH to help it to integrate forces and resources via effective coordination with line units of mixed abilities and finance its own budget. A specialized USAID-funded core group of experts could make an important contribution to CICH's effectiveness over the next few years. Likewise, USAID/Panama could facilitate Fundacion NATURA's efforts to fund economically sustainable field projects based on technical criteria and stable markets.

The evaluation team recommends that USAID/Panama support the establishment of new public-private linkages as a means to establish a more sustainable national system of protected areas. USAID possesses special interests to help Panama look for more productive and dynamic park mechanisms that generate greater public and economic goods. For example, under a USAID funded endowment program in Costa Rica, the NGO FUNDECOR provided highly regarded park management and operations services in Costa Rica's parks. It also provided related market and fund raising, research and training, community economic participation services facilitated initially under a major endowment fund. USAID/Panama should explore this alternative for Panama, at least for the high priority protected areas in the Panama Canal Watershed.

USAID/Panama should assist Panama to explore the alternative funding sources that are needed to expand the presence of the national government in the national system of protected areas. For example, the Panama Canal Authority (ACP) should be encouraged to provide significant financing for the areas in the national system of protected areas that lie within the Panama Canal Watershed. USAID/Panama could encourage the ACP to provide an additional endowment to the FIDECO trust fund, earmarked specifically for activities within the Panama Canal Watershed. USAID/Panama could also encourage broader donor coordination and leverage facilitation for the national system of protected areas, encouraging CICH and ANAM to dedicate more attention, through studies and evaluations, to this possibility. With additional interest income, FIDECO could better support the national system of protected areas as well as move into a role that would be similar to that of FUNDECOR in Costa Rica. A fourth possibility for USAID/Panama action is to support the expansion of ANAM's ability to generate revenue, through activities in the national system of protected areas, such as the promotion of more ecotourism.

Finally, the evaluation team recommends that USAID/Panama help provide greater focus, support, and leverage critical technical support services to rural residents in the Panama Canal Watershed. For example, in spite of many years of work, there remains a great need in the rural areas of Panama for training in technologies, such as agroforestry practices, that maintain and increase soil productivity as well as training in post-harvest processing and marketing.

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## SECTION I

### INTRODUCTION

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#### A. PURPOSE AND SCOPE OF THE EVALUATION

For eleven years, from mid-1991 through the end of 2002, the MARENA Project (Management of Natural Resources Project) occupied much of USAID/Panama's financial resources and administrative attention. Nonetheless, during this period MARENA never underwent a comprehensive mid-term or final evaluation. Consequently, in early 2003, shortly after the implementation of MARENA had ended, USAID/Panama did not have a clear grasp of the extent of and reasons for MARENA's accomplishments and difficulties. It was, therefore, unable to incorporate MARENA's experiences into the design and implementation of its program to assist Panama to protect and manage its environment and natural resources.

This evaluation attempts to remedy this lack of useful knowledge about MARENA. It sums up MARENA's principal accomplishments, identifies its principal difficulties, and distills its most important lessons. On this basis the evaluation then makes recommendations to USAID/Panama on the future strategic directions of its support to Panama's environmental and natural resources sector. The evaluation thus provides a basis for USAID/Panama to understand and utilize MARENA's many valuable experiences.

#### B. EVALUATION METHODOLOGY

The Team Leader initiated the evaluation on January 2 and 3, 2003, in Washington, D.C. where he interviewed the technical staff of USAID/W and consulting firms who had been associated with MARENA.

Subsequently, both members of the evaluation team spent five and a half weeks in Panama, from January 5 through February 11, 2003. During the first week they reviewed USAID Panama MARENA project documents, interviewed USAID/Panama officials, and made a field trip to see a national park and NGO activities in western Panama. The Team Leader also prepared a work plan and report outline, which were presented to and approved by USAID Panama. In the second week, the evaluation team consulted extensively with government and NGO staff members who had been associated with MARENA.

During weeks three and four, one team member (Bruce Kernan) made field visits to national protected areas and their surroundings, mostly within the Panama Canal Watershed but also in western Panama. He interviewed the staff of protected areas and environmental NGOs, observed projects financed by the Conservation Trust Fund (FIDECO), and made observations in and around protected areas. Meanwhile, the Team Leader (David Bathrick) conducted detailed interviews in Panama City with a wide range of knowledgeable informants who had been involved with MARENA. The team devoted its fifth week to completing field visits within the Panama Canal Watershed and writing the first draft of its report. At the end of week five the team sent this draft to USAID/Panama.

At the beginning of week six, the team reviewed its findings and the draft report with USAID/Panama staff. At the end of week six, USAID/Panama provided the team with detailed, written comments on the draft report. During week seven Bruce Kernan revised the draft report on the basis of these comments. He sent a revised draft to Development Associates. The permanent professional staff of Development Associates reviewed this draft and prepared a final version of the report, which was sent to USAID/Panama in early March.

Attachment 2 provides the names of the people the evaluation team interviewed. Attachment 3 notes the location and dates of its field trips.

### **C. REPORT STRUCTURE**

The report has five sections. After this introductory section, Section II sets the stage for MARENA. It first summarizes the activities and results of the Watershed Management Project, which was the USAID/Panama financed natural resource project during the 1980's. It then describes the salient characteristics of the Panama Canal Watershed, the principal focus of MARENA's activities. Finally, it describes the new and evolving Panamanian public and private institutions that developed for environmental and natural resource management during the 1990s and which affected MARENA's activities and results.

Section III provides the "meat" of the evaluation. It compares MARENA's proposed with its actual activities and results, assesses the implications of the differences and suggests what actions remain to be undertaken in order to achieve MARENA's purposes.

Section IV responds to the specific questions posed to the evaluation team in the Scope of Work. Section V draws the principal lessons to be learned from the MARENA experience. Finally, Section V provides recommendations for future USAID/Panama support to Panama's environmental and natural resource sector.

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## SECTION II

### BACKGROUND INFORMATION AND SETTING OVERVIEW\*

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#### A. THE USAID/PANAMA WATERSHED MANAGEMENT PROJECT

In the 1970's, USAID/Panama identified the unplanned and exhaustive use of the renewable natural resources of Panama, such as deforestation for agriculture, grazing, and timber extraction, as the cause of the seasonal flooding and drought, soil erosion, and loss of land productivity that threatened the dry season navigation of the Panama Canal and the survival of Panama's unique biological resources.

USAID/Panama responded to these problems by financing and implementing the Watershed Management Project (525-0191) in collaboration with the General Directorate for Renewable Natural Resources (RENARE). RENARE had been formed in 1973 within the Ministry of Agricultural Development (MIDA) by consolidating two small foil survey and forest conservation units. The purposes of the Watershed Management Project were: (1) to strengthen RENARE; (2) to increase public awareness of the importance of natural resource conservation; and (3) to establish watershed management programs in the Canal, Rio La Villa and Rio Caldera Watersheds.

The Watershed Management Project did increase RENARE's capabilities. The number of personnel grew from 440 to 850. Its staff expertise increased through recruitment of qualified professionals, technical assistance and training. It gained watershed management experience by implementing soil conservation, improved pasture practices and 4,000 ha of reforestation. It built facilities in three national parks and wrote a strategy for protecting national protected areas. Through a farm woodlot demonstration program and a public environmental education campaign, RENARE gained local support and raised national awareness of the problems caused by natural resource degradation. As a result, environmental NGOs began to form. (USAID/Panama, 1991).

Nonetheless, when the Watershed Management Project ended in 1985, RENARE was still not a fully effective natural resource management agency. It had only an advisory role within MIDA. Implementation of fields operations remained under the control of the MIDA regional offices and RENARE could not exercise its regulatory mandate. The regional offices of MIDA had other priorities that differed greatly from, and were sometimes in direct conflict with natural resource conservation priorities. The MIDA Regional Coordinators, for example, often assigned RENARE staff, funds and equipment to other MIDA activities. They also frequently ignored the technical recommendations of RENARE staff. RENARE's direct field project experience remained limited to the Watershed Management Project, the CATIE Regional Multipurpose Tree Crop Project and an agroforestry program with CARE.

In 1986, USAID/Panama designed a follow-on project to the Watershed Management Project, which was named the Management of Natural Resources Project (MARENA). MARENA was

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\* This section is summarized from the MARENA Project Paper.

to address nationally the full range of Panama's natural resource problems including soil and water conservation, parks and protected areas, natural forest management, farm forestry, industrial plantations and strengthened field operations of RENARE. It was to have implemented activities in all parts of Panama, from the Darien in the east to Chiriqui and Bocas del Toro in the west. In addition to strengthening RENARE, the project was to have stimulated private sector investment in reforestation. MARENA was to have been a 10-year effort with US\$50 million in LOP funding, \$35.7 million of which was to be financed by USAID/Panama.

USAID/Panama, however, considered three changes to be necessary for the public sector component of MARENA to be effective: (1) elevation of the status of RENARE to be the lead agency of the government on natural resource management and environmental matters; (2) full operational authority for regulating natural resource use, and for managing public lands; and (3) control and continuity of income from forest and water concessions, permits, fees and fines authorized by law. These criteria were met with the passing of Panamanian Law 21 on December 16, 1986. Law 21 created the National Institute for Renewable Natural Resources (INRENARE) as a semi-autonomous agency within the Ministry of Planning (MIPPE). As an institute, INRENARE could, unlike RENARE, establish its own provincial offices, free from the oversight and encumbrance of a ministry's bureaucratic hierarchy.

After passage of Law 21, USAID completed project negotiations with MIPPE. However, the signing of the Project Agreement, set for February 1987, was postponed as relations with Panama began to deteriorate. With renewal of USG assistance to Panama in 1990, USAID/Panama reformulated MARENA and it was finally approved in June 1991.

## **B. THE PANAMA CANAL WATERSHED**

Before 1997 the Panama Canal Watershed included only the 331,309 hectares (ha) that currently supply water for the operations of the Panama Canal, urban water supplies and hydroelectric power. Two basins make up the 331,309 ha, Lake Gatun, or Western Basin, and Lake Alhajuela, or Eastern Basin. In 1997, Law 44 expanded the legal limits of the official Panama Canal Watershed to encompass an additional 225,000 ha, in the area that is referred to as the Western Region. The Western Region, which lies to the west of the Lake Gatun Basin, is a potential future water supply area: it does not as yet, however, supply water for potable water, hydropower or canal operations. The official Panama Canal Watershed, therefore, now encompasses 552,761 ha. Law 44 gave the Panama Canal Authority (ACP) overall responsibility for maintaining the quality and quantity of water production in the Panama Canal Watershed.

The Panama Canal Watershed (PCW), due to its location in the Inter Tropical Convergence Zone a short distance from two oceans, and to its mountain ranges, that cause orographic rainfall, is one of the world's most productive tropical water basins. The average production of water from the Lake Gatun and Lake Alhajuela Basins (excluding the Western Region) is 1.107 billion gallons per year. Because the eastern basins has higher mountain ranges and, therefore, higher average annual rainfall, it supplies 40 percent of the PCW's water production, although it occupies only 28 percent of its area. The production of water from the Western Region is approximately 4.149 Mm<sup>3</sup>/yr. (Cuevas, J., 2001). Water production normally declines during the dry season, from December through April. El Nino climatic events can cause an even greater drop in water production.

The operation of the canal locks require 662 billion gallons/yr., municipal potable water consumption require 66 billion gallons/yr., and the generation of hydroelectric power at the Gatun plant require 379 billion gallons/yr. The total of these uses is 1.107 billion gallons per year, approximately 92 percent of the entire runoff of the PCW watershed. The trend from 1914 to the present has been for less water to be released over the Gatun Dam spillway and for more water to be utilized for municipal water systems (Vargas, C., 1996). Especially during El Nino climatic events, the threat exists that Lake Gatun may become too shallow for the passage of larger vessels. The ACP is studying the feasibility of transporting water by tunnels from the Western Region into Lake Gatun (Vargas, C. per. com. 2003).

Table 1 indicates the land uses in 2001 in the Western and Eastern watersheds.

**TABLE 1**  
Land Use in the Western and Eastern Watersheds of the Panama Canal Watershed, 1998

Land Use	Areas (ha)
Forest	157,000
Pasture/agriculture	34,000
Secondary forest/brush	90,000
Water bodies	42,000
Urban	4,000
Denuded land	1,000
Unclassified	3,000
<b>TOTAL</b>	<b>331,000</b>

Source: FAO, 2001.

Land use mapping in the Western Region has not been completed. The team's field observations and visual examination of satellite images suggest that perhaps 60 percent is under continuous forest cover and about 40 percent is covered by secondary forest, pasture and agriculture.

Table 2, indicates the names and areas of the eight national protected areas in the PCW. The total area of the protected areas in the PCW is 192,368 ha, or 34 percent of the total area of the PCW.

**TABLE 2**  
Protected Areas within the Panama Canal Watershed

Protected Area	Area (ha)
Soberania National Park	22,929
Camino de Cruces National Park	4,000
Chagres National Park	129,600
Altos de Campana National Park	4,816
Omar H. Torrijos National Park	25,275
Lake Gatun Recreational Area	348
Barro Colorado Natural Monument	5,400
<b>TOTAL</b>	<b>192,368</b>

Source: Evaluation Team based on ANAM Map "Sistema Nacional de Areas Protegidas," no date.

<sup>1</sup> Although only part of the Altos de Campana National Park lies within the Panama Canal Watershed its entire area is included.

<sup>2</sup> The Omar Trillos National Park lies in the upper watershed of the San Juan River, one of the principal rivers in the Western Region of the PCW.

Considerable areas of the national protected areas were superimposed on lands that were previously owned or occupied. To gain complete control over these lands, the national government would have to purchase the land itself and improvements, such as pastures, agriculture or buildings. Since the national government has rarely provided funds for land purchase, a large percentage of some of the protected areas remain under private control, although subject to national protected area regulations.

Sedimentation rates at present are not excessively high in the Panama Canal Watershed. For example, while sedimentation in a tropical forest watershed generally varies in the range of 100 and 600 tons/ha/yr., sedimentation in the Chagres subwatershed, the largest producer of water in the PCW, is 255 tons/km<sup>2</sup>/yr. The Boqueron River basin, with 879 tons/km<sup>2</sup>/yr., has the highest rate of sedimentation in the PCW; this high rate is, however, due to extremely high rainfall and steep slopes, not to deforestation. Visual inspection and examination of satellite images of the Western Region did not indicate more than limited soil erosion problems. Nonetheless, severe soil erosion certainly remains a latent threat in the PCW, particularly in areas being used for intensive cattle or horticulture production, given its widespread combination of easily eroded red clay soils, steep slopes and high rainfall.

Water contamination, by contrast, as measured in the levels in rivers and lakes of nitrates, phosphates, organic material and micro-bacteria, poses an increasing threat to the water quality of the PCW. Immigration from the Interior Provinces, has increased the PCW's population from 21,000 in 1950 to over 150,000 in 2000. This population is concentrated in the Trans Isthmus Corridor. This growing human population, plus industrial production and concentrated livestock operations in the Trans Isthmus Corridor have contributed to the contamination of rivers and lakes, particularly in the area of Chilibre. West of Lake Gatun, agrochemical use, concentrated poultry, swine and cattle operations, and construction contribute to increasing water contamination. Decreased water volumes during the dry season increases the concentration of water contamination.

### **C. INSTITUTIONS IN THE PANAMA CANAL WATERSHED**

During the 1990's, existing and new Panamanian public and civil society institutions evolved or were established in response to a wider range of environmental and natural resource protection and management issues. These institutions received international financial assistance through the World Bank, the Inter American Development Bank, bi-lateral cooperation, including USAID/Panama and USAID Regional Programs.

In the public sector, INRENARE, focused as it was on protected areas and forestry, did not provide an adequate institutional basis for the national government to address Panama's wide range of environmental problems, such as water and air contamination and agrochemicals. Consequently, the Panama Congress and President, in 1998, approved the Environmental Law 41, which established the National Environmental Authority (ANAM). At the national level, INRENARE was subsumed within ANAM's Department of Natural Patrimony. At the field level, the INRENARE offices became part of regional ANAM offices. The ANAM regional directors, whose purview included the entire range of provinces' environmental problems, now supervised the former staff of INRENARE, such as the directors of national protected areas.

The GOP created two new institutions, in order to guide and manage the transfer of the Panama Canal from the United States to Panama: the Autoridad de la Region Inter-Oceanica (ARI) and the Autoridad del Canal de Panama (ACP). Both institutions have responsibilities and functions that include or affect the protection and management of the environment and natural resources within the Panama Canal Watershed. The ARI, created in 1993, administers the disposal, by sale or transfer, of the infrastructure and land that was transferred from the United States to Panama as a result of the 1977 Treaties. Because of the assets that it controls, ARI has become a powerful institution within the former Canal Zone area of the Panama Canal Watershed. However, as it transfers the assets of the interoceanic region to the private sector and to other government institutions, ARI's power and influence is diminishing. Its functions are supposed to end in 2005.

In 1999, Law 44 established the ACP, which assumed the roles and functions of the former Panama Canal Commission. The Panama Canal Commission, however, had never concerned itself with the protection or management of the Panama Canal Watershed. Law 44, by contrast, explicitly assigns responsibility to the ACP for the management, maintenance, use, and conservation of the water resources of the Panama Canal Watershed. Recognizing the inter-institutional and inter-disciplinary nature of integrated watershed management, the law requires the ACP to establish the Comisión Inter-Institucional para la Cuenca Hidrográfico (CICH), whose purpose is to "...integrate efforts, initiatives and resources to conserve and manage the watershed of the Panama canal and promote their sustainable use...". The CICH coordinates the policies and programs in the Panama Canal Watershed of eight public and private institutions: the ACP, ANAM, MIDA, ARI, the ministries of government, justice and housing, Fundación Natura and Caritas Arquideocesana. Law 44 requires CICH to become self-financing after two years. In addition to CICH, the Division de Administracion Ambiental, Seccion de Manejo de Cuenca, which is implementing agroforestry and soil conservation in the Panama Canal Watershed, has become an increasingly prominent part of the ACP.

In the early 1980's, the only Panamanian environmental NGO was the Asociacion Nacional de Conservacion (ANCON), established and financed by Panamanian industrial and commercial interests, who were concerned about the degradation of Panama's natural resources and environment. During the 1990's, however, the number of Panamanian environmental NGO's exploded. By 2002 there were over 400 registered environmental NGOs although, of these, perhaps 20 to 30 actually were operating at any one time. The environmental NGOs, moreover, tended to have overlapping memberships, consisting of only a few family members, or have been formed to respond to specific opportunities for project financing.

At present the Fundación Natura has become Panama's most financially and institutionally solid environmental NGO. Fundación Natura was founded in 1991, with the assistance of the Nature Conservancy and USAID, specifically to administer the use of the interest produced by the Fondo Fiduciario de Conservacion (FIDECO), which was to be established with MARENA, GOP and TNC funds. It is permitted to utilize 10 percent of the interest earned on FIDECO's investments for its own administration. It has, therefore, a reliable source of funding unavailable to other environmental NGOs. Fundación Natura has, moreover, benefited from its close links to the Nature Conservancy, which enable it to access additional funding and technical assistance.

Other well-established Panamanian environmental NGOs are SONDEAR, former Technoserve, and the Centro Internacional para la Capacitacion Ambiental (CICA), created in 1999, which

provides training to Panamanian environmental NGOs. By contrast with the growth of these two NGOs, by 2002, due to reduced financing and unclear goals, ANCON's level of activity has declined.

Recently, the Inter-American Development Bank (IADB) and the World Bank have financed activities that are complementary to MARENA. An IADB loan for US\$17.5 million has financed the Programa Ambiental Nacional (PAN), which supports the institutional strengthening of ANAM, the development of the norms and regulations for environmental management, and environmental infrastructure, such as sanitary systems, constructed by local governments. PAN also is financing studies on how ANAM can obtain financial resources for its operation from fees, concessions and services. The IADB has also financed the US\$88 million Darien Sustainable Development Program. The program includes the construction and improvement of the main road through the Darien, local institutional development, natural forest management, agricultural development and the construction of infrastructure in the Darien National Park.

The World Bank has lent the GOP US\$40 million for the implementation, through MIDA and NGO's, of the Programa de Manejo Sostenible de las Areas Rurales de la Cuenca Hidrografica del Canal de Panama (MASAAR). MASAAR's purpose is to achieve greater convergence between actual land uses and the land uses required by Law 21. The World Bank has also lent the GOP US\$8 million of the Panama Atlantic Mesoamerican Biological Corridor (CBMAP) Project. CBMAP finances land use planning, monitoring of environmental impacts and biological diversity, environmental communication, training in park management, and new park infrastructure. Through a conservation trust fund similar to that established by MARENA, it also finances community micro-enterprises based on the commercial exploitation of biological resources. So far the fund has US\$1.1 million in 79 subprojects.

Two factors have reduced the prominence of the USAID/Panama environmental and natural resource program. First, while USAID/Panama was once a major contributor to ANAM's budget, it is now a fairly small source of funds, especially when compared to the large World Bank and IDB loans. Moreover, USAID/Panama's uncertain future during much of the last twenty years has affected the continuity and stability of its environment and natural resource program. Although the U.S. Congress provided USAID/Panama with \$300 million in economic assistance in 1991, by 1995, overall USAID budget cuts caused USAID/Panama to be slated for closure by 1998. Although the influence of the U.S. Ambassador has so far succeeded in extending the date of closure of USAID/Panama to 2006, uncertainty still remains as to the length of its continued involvement in support to the Panamanian environmental and natural resource sector.

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## SECTION III

# MARENA PROJECT AND EVALUATION FINDINGS

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This section presents MARENA's goal and purpose statement, reviews its budget status, summarizes related projects financed by other donors, compares the proposed with the actual project activities and assesses the project's end-of-project status.

### A. SUMMARY OF MARENA

On June 4, 1991, the USAID Mission approved the MARENA Project Agreement. MARENA was to be a 7-year effort to strengthen INRENARE's and civil society's ability to protect and manage Panama's renewable natural resources. MARENA had three components: Panama Canal Watershed; National Parks and Wildlands Management; and Institutional Strengthening. A natural forest management component was eliminated before the Project Agreement was signed.

Originally MARENA was national in scope, with an emphasis on the Panama Canal Watershed. In 1993, however, MARENA activities were restricted entirely to the Panama Canal Watershed, with the exception of a portion of the projects financed by the FIDECO conservation trust fund. The National Institute for Natural Resources (INRENARE) was the original GOP counterpart. In 1998, ANAM replaced INRENARE as the government counterpart. The original Project Action Completion Date (PACD) was in 1998. This date was extended several times and now is in 2006. For administrative reasons, this PACD has not been changed but, in fact, USAID/Panama ended MARENA as of December 31, 2002.

MARENA's goal was to promote sustained economic and social development. Its purpose was to protect and manage Panama's renewable natural resources, with particular emphasis on the Canal Watershed.

Under the Project Agreement, the total cost of MARENA was \$41,174,000. The USAID/Panama contribution was to be \$18,000,000. Panama was to finance \$23,174,339.00, including a contribution of \$15,000,000 to a conservation trust fund. TNC was to provide \$2,000,000 to the conservation trust fund.

In fact, USAID/Panama has obligated \$23,254,486 with MARENA, \$5,254,486 more than initially planned. As of December 31, 2002, MARENA's net accrued expenditures were \$22,643,271 and its unliquidated pipeline was \$611,215. Table 3 summarizes USAID/Panama financing for MARENA as of December 31, 2002.

**TABLE 3**  
**MARENA PROJECT Financial Status as of December 31, 2002 (US\$)**

Fiscal Year	Amount Obligated	Net Accrued Expenditures	Pipeline Unliquidated Balance
1991	10,000,000	10,000,000	0
1992	3,000,000	3,000,000	0
1993	2,000,000	2,000,000	0
1994	1,000,000	999,364	636
1996	1,257,553	1,205,354	52,199
1997	742,447	742,379	68
1998	800,000	799,735	265
1999	1,569,900	1,547,796	22,104
2000	1,445,000	1,151,133	293,867
2001	1,439,586	1,197,510	242,076
<b>Project Total</b>	<b>23,254,486</b>	<b>22,643,271</b>	<b>611,215</b>

Source: USAID Project Reports.

The GOP and the TNC contributions to the MARENA Project Budget remained unchanged, so the total project budget is now \$46,428,486. Before 1998, INRENARE contributed a share of MARENA's budget. ANAM's absorption of INRENARE in 1998, however, added to reductions in the USAID/Panama staff, and complicated tracking of MARENA's counterpart funding. As a result, the counterpart contribution to MARENA no longer is clear.

## **B. ANALYTICAL ASSESSMENT OF MARENA PROJECT COMPONENTS**

### **COMPONENT 1: PANAMA CANAL WATERSHED MANAGEMENT**

#### *Component Purpose Statement*

The purposes of this component were: (1) to assist INRENARE in developing land use policies, prepare integrated watershed management plans, and to coordinate and oversee collaborative programs of the public and private sector in the PCW; (2) to enhance INRENARE's capacity to assess and monitor the environmental impacts of ongoing or proposed natural resource development actions; and (3) to develop and install administrative and financial management systems in INRENARE to improve its management of national parks and equivalent reserves. USAID support for this component initially was for \$1,875,000 and through amendments, the total increased to \$3,937,000.

#### *Assessment of Programmed Activities*

The Panama Canal Watershed Management component had three activities, Interagency Coordination and Planning, Land Use Classification, and Institutional Strengthening.

The **Interagency Coordination and Planning Activity** was intended to support an Interagency Technical Committee of the Canal Watershed, which would prepare an integrated management plan for the Panama Canal Watershed. Under a PASA Agreement, U.S. Bureau of Land

Management experts in integrated watershed management guided INRENARE in coordinating a process of participatory, inter-institutional planning for the Panama Canal Watershed. Through this process, Panamanian professionals, representing a wide range of private and public institutions, prepared the document La Cuenca Hidrografica del Canal de Panama: Prioridades y Acciones Recomendadas para su Manejo Integral, dated February 1995, and became more cognizant of how the concepts and practices of integrated, inter-institutional, participatory watershed planning could contribute to the effectiveness of the management of the Panama Canal Watershed.

Although INRENARE coordinated this planning process, neither it, nor its successor, ANAM, became the coordinating agency for the management of the Panama Canal Watershed, as foreseen in the MARENA project design. On the one hand, in 1998 when ANAM replaced INRENARE, it assumed a wider range of responsibilities, without a commensurate increase in its budget or staff. Therefore, although it did have a legal mandate to coordinate nationally the management of natural resources, including watershed management, ANAM did not have sufficient staff or financial resources to fulfill this responsibility in the Panama Canal Watershed, much less elsewhere.

On the other hand, the 1997 Law 19 specifically assigned the Panama Canal Authority (ACP) specific responsibility for interagency coordination in the Panama Canal Watershed, through the establishment of the *Comite Inter Institucional para la Cuenca Hidrografica (CICH)*. CICH, with considerable financial backing of the ACP and international institutions, including USAID/Panama, assumed the coordinating role for planning and implementing the management of the Panama Canal Watershed. Thus ANAM, as a member of CICH, contributes to, but does not coordinate, activities to protect and manage the Panama Canal Watershed.

The **Land Use Classification Activity** was to improve INRENARE's capabilities for land use classification, especially within the Panama Canal Watershed, and for environmental impact assessment of actions, such as road building, occurring near to national protected areas. MARENA did provide INRENARE staff with GIS training and equipment. The ARI and ACP, however, with access to more technical and financial resources, have developed stronger land classification capabilities within the Panama Canal Watershed than has ANAM. In order to guide the development strategies for the former Canal Zone, ARI, for example, commissioned *The General Plan for Conservation of the Panama Canal Watershed*. This plan formed the basis for approval of Law 21, which is the legal basis for future land use within the former Canal Zone. MARENA funds have financed the preparation of a system of monitoring for the Panama Canal Watershed, carried out by STRI-ANAM-USAID and subsequently by the Louis Berger Group. Although coordinated with ANAM, the ACP has been more closely involved with these studies. As a result of these studies, both ARI and ACP have added to their stature as technically competent institutions.

By the time that ANAM absorbed INRENARE, MARENA had not yet provided significant support for strengthening its environmental impact assessment capabilities for development activities in or near protected areas. ANAM's legal responsibilities included the approval of environmental impact assessments, not just in and close to protected areas, but throughout Panama. MARENA did not, so far as the evaluation team could ascertain, provide technical assistance or training with the purpose of strengthening ANAM's capabilities to prepare, approve or supervise environmental assessments. The Programa Ambiental Nacional Project (PAN),

however, financed by a loan from the IADB, has done so. In the field, many signs indicate that ANAM has granted its approval to environmental assessments for development projects, such as hotels and reforestation programs, indicating that the approval of environmental assessments has become a regular part of ANAM's activities. The evaluation team, however, lacked sufficient time to evaluate thoroughly ANAM's environmental assessment capabilities.

The **Institutional Strengthening Activity** was to improve INRENARE's capability for managing the national system of protected areas (SINAP) by reformulating its administrative, personnel, financial management and accounting and management systems and procedures. MARENA was to provide INRENARE with a plan for its institutional development, including descriptions of staff positions, an organizational manual and improved financial management, accounting, and procurement procedures. With MARENA financing, Price Waterhouse, the Carana Corporation, and Lic. Generoso Nicolas did prepare these systems and procedures. When ANAM absorbed INRENARE, however, it did not adopt these nascent administrative systems and practices. Rather, ANAM is restructuring itself administratively utilizing funds from the IADB PAN loan. To assess the details or effectiveness of this institutional strengthening activity falls outside of the scope of the present evaluation.

Table 4 compares MARENA's proposed and actual activities in its Component 1, Panama Canal Watershed.

**TABLE 4**  
**Component 1: Panama Canal Watershed. Summary of Proposed, Actual and Need Activities, 1991-2002**

Proposed Activities	Status of Activity, 2003	Future Needs
INRENARI coordinating PCW Technical Committee functioning	CICH created with ANAM as a member.	ANAM technical capacity developed for integrated watershed management.
PCW zoned and resource use regulated by INRENARE	ANAM working on land use zoning and regulation of resource use.	Improved ANAM effectiveness in working with local governments to apply land use zoning and regulation of resource use.
INRENARE with capacity to assess land use impacts.	ANAM operating system of environmental impact assessment and regulation.	Quality of ANAM's environmental assessment and effectiveness of application of mitigation measures improved.
INRENARE with management systems developed and utilized.	Management systems developed for INRENARE but not utilized by ANAM.	Effective application of new management systems being developed for ANAM.

Source: Evaluation team based on interviews, observations and documents.

## COMPONENT 2: NATIONAL PARKS AND WILDLANDS

### *Component Purpose Statement*

The objective of this component was to conserve the biological diversity of Panama through the protection and management of national protected areas. Its purposes were to (1) provide adequate on-site protection for national parks and reserves that contain significant ecological systems and provide downstream watershed and other environmental benefits; and (2) identify, protect and manage endangered ecosystems, natural communities and species. USAID support for this component was initially \$5.5 million. Through amendments, financial support for this component increased to \$6.4 million.

### *Assessment of Programmed Activities*

The National Parks and Wildlands Management Component had four activities: Parks and Reserves Protection, Park System and Reserve Personnel, Parks Reserves Management, and Policy and Planning.

The **Parks and Reserves Protection Activity** was to support eleven national parks and three reserves throughout Panama, focusing on those areas where population pressure and resource degradation were the most severe. The possibility existed that the initial list of 11 parks and 3 reserves to receive project assistance could be expanded to include additional areas.<sup>2</sup> In 1993, however, its activities were restricted to the 6 national protected areas within or bordering the PCW: Soberania, Altos de Campana, Chagres and Camino de Cruces, Lake Gatun Recreational Area and the San Lorenzo Protected Area. USAID selected these areas, upon instructions from Washington, D.C., not on the basis of population pressure or severe resource degradation, but because they were within the Panama Canal Watershed. Nonetheless, it is true that within the Inter Isthmus Corridor, population growth is faster than anywhere else in Panama, and represents a threat to some parts of these protected areas.

The Parks and Reserves Protection Activity was to prepare management plans for the 6 parks and 3 reserves which lacked them. MARENA did finance planning documents for protected areas. Technical advisors, who were provided through a Participating Service Agreement (PASA) with the U.S. National Park Service, assisted INRENARE and then ANAM to prepare two types of planning documents: action plans and management plans. In 1993, Action Plans were prepared for Chagres, Caminos de Cruces and Campana National Parks. In 1994 Management Plans were prepared for Chagres National Park, Lake Gatun Recreational Area and Soberania National Park. Through another PASA Agreement with the U.S. Forest Service, MARENA assisted ANAM to prepare, in 1999 and 2000, tourism plans for the San Lorenzo Protected Area and the Lake Gatun Recreational Area.

In all, MARENA financed the preparation of 13 plans, two more than specified in the Project Agreement. However, only three, rather than six of the plans, were the complete management plans mentioned in the Project Agreement, and they were prepared only for protected areas within the Panama Canal Watershed. Table 5 summarizes the types, prepares and dates of the

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<sup>2</sup> The parks were: Soberania, Chagres, Darien, La Amistad, Bastimentos, Volcan Baru, Altos de Campana, Portobelo, El Cope, Cerro Hoya-Coiba, Sarigua and the reserves were: Isla Taboga, Isla Iguana and Palo Seco

park plans that were prepared with MARENA financing and technical assistance from 1992 to 2002.

**TABLE 5**  
**Plans Prepared for Protected Areas with MARENA Project Financing, 1992-2002**

Year	Protected Area	Type of Plan	PASA
1993	Chagres National Park	Action Plan	USNPS
1993	Altos de Campana National Park	Action Plan	USNPS
1994	Camino de Cruces National Park	Action Plan	USNPS
1994	Chagres National Park	Master Plan	USNPS
1994	Altos de Campana	Management Plan	USNPS
1994	Lake Gatun Recreation Area	Management Plan	USNPS
1994	Soberania National Park	Management Plan	USNPS
2000	Soberania National Park	Tourism Plan - Engineering	USFS
2000	Soberania National Park	Tourism - Signs	USFS
2001	San Lorenzo Protected Area	Tourism - Image	USFS
2001	San Lorenzo Protected Area	Tourism - Acceptable Change	USFS
2001	San Lorenzo Protected Area	Tourism - Recreation/Scenery	USFS
2001	San Lorenzo Protected Area	Tourism - Site Planning	USFS

Source: Evaluation team based on USAID/Panama files.

The Action Plans proved to be the most effective of these plans. They provided technical justifications for urgent park management actions, thus permitting MARENA to precede with park boundary delimitation, infrastructure construction and equipment purchases. These actions increased the presence of INRENARE in the PCW national parks, leading to their increased protection. The Management Plans, by contrast, took a long time to prepare and to be officially approved. Those plans recommended park budget and personnel levels that neither MARENA nor the government of Panama were willing to finance. The Tourism Plans did provide useful guidance to park staff for managing tourists and providing interpretation. Field observations, however, indicate that only a few recommendations of the Tourism Plans have been implemented.

Under the Parks and Reserves Protection Activity, MARENA was to use \$3,219,000, the largest single item in its budget, to finance infrastructure for each of the 13 parks and reserves included in the Project Agreement. "Infrastructure" included the survey and posting of the boundaries of the protected areas, the marking of trails and the construction of basic infrastructure. "Basic infrastructure" included administration offices, back country stations, maintenance buildings, staff residences, guard shelters, entrance booths, gates, docks and interpretation centers, fences, gates, signs and tourist facilities. In April 1995 USAID/Panama and INRENARE agreed to give priority to infrastructure in protected areas within the Panama Canal Watershed, including the two new protected areas that had been established after the 1991 grant agreement and were included in the project: Camino de Cruces National Park and Gatun Recreational Area. As a consequence, financing for infrastructure for protected areas outside of the Panama Canal Watershed was eliminated from the National Parks and Wildlands Component of MARENA, although it continued to be financed under Component 3, the Conservation Trust Fund.

The infrastructure constructed with MARENA funds made it possible for the national government to establish its presence in the protected areas of the Panama Canal Watershed during a period when their territorial and ecological integrity was severely threatened. During

the 1990's the protected area in the former Canal Zone reverted from control by the United States to control of the national government of Panama. As this occurred, many interest groups exerted pressure to obtain control over land within the former Canal Zone, including parts of its protected areas. Government ministries eyed the protected areas as potential sites for housing projects or for new roads. Agricultural communities located along the boundaries of the protected areas perceived them as potential areas for expansion of their agricultural activities or as sources of wild game. Private businesses examined the possibility of entering protected areas to set up tourism businesses and mining operations.

The visible presence of the national government provided by the basic infrastructure, such as buildings and signs, helped to maintain the integrity of these protected areas. The infrastructure also made more efficient and effective the work of the staff assigned to the protected areas. Field inspections of the buildings constructed with MARENA funds, under this component in the Panama Canal Watershed, indicated that most of them were well-designed for their functions and were being utilized. In general, therefore, the infrastructure activity made a solid, long-term contribution to the protection and management of the Panama Canal Watershed's protected areas.

The infrastructure, however, could have been more effective. Perhaps its weakest point was the location of the most expensive and important buildings, the cluster formed by administrative headquarters or sub-headquarters, and associated interpretation centers, park guard quarters and vehicle repair shops. The administrative headquarters of the Chagres National Park was located at the end of a remote, two-km long, dead-end road. The only visitors to the interpretation center were groups of school children. The large groups of mostly foreign tourists who visit indigenous communities within the park, by boat on Lake Alhajuela, did not go by, much less stop at, the administrative headquarters or at the interpretation center. Unfortunately, the sub-headquarter building was located 1.5 km from Puerto Carotu, where the tourists transfer from buses to boats. The buses, therefore, go past the subheadquarters without stopping, and the park staff finds it difficult to know who and how many people were entering the park, much less control these visitors. Many visitors to the park did not bother to stop at the administrative headquarters or at the Agencia Alhajuela to pay the admission fee. The Park Director had to shuttle between the administrative headquarters, which few people visited, and the Agencia Alhajuela, where most activity occurred, consuming gasoline and wasting time. Each time the park staff needed to use its boat on Lake Alhujel, it had to load the boat on a trailer and transport it 1.5 km to the lake. Without a building at the lake landing, the park staff could not oversee the visitors to the park or control the accumulation of trash.

Similarly, in the Soberania National Park, the Agencia Veraguena was placed directly on the alignment of the future Corredor Norte. The government has promised to indemnify the park for its destruction. But the effort put into that building will be lost and, while the building is reconstructed elsewhere, that access point to the park, utilized by illegal hunters, will be less controlled. In the Camino de Cruces National Park, its administrative headquarters, is located next to a dump of chemicals from the former U.S. Army Tropical Test Center. These chemicals may be dangerous to the employees of the park and to park visitors. Also, it is located several km from the turn-off from the main road. Consequently, the park staff cannot control the entrance of the garbage trucks that transit the park to the municipal landfill on the other side. The result is that the road that crosses the Camino de Cruces National Park is littered with trash. The administrative headquarters of the Altos de Campana, is not only located about 100 meters

back from the entrance road, but is placed on a hill that is exposed to very strong winds. Due to this location, the park administrative staff does not utilize the building. The sub-headquarters of the Altos de Camapana National Park, near Trinidad Alto, is simply located next to the road. Its location bears no obvious relationship to a point of access to the park, as it would have if, for example, it had been located within the village of Trinidad Alto itself.

The construction of these buildings utilized a high percentage of MARENA's funds. It is unfortunate, therefore, that more careful thought was not given to placing them on sites that would allow them to be utilized for maximum efficiency and of the lowest operational costs. Given the extremely reduced budgets for the operation of the protected areas, they must not incur unnecessary expenses and should utilize their limited staff with maximum efficiency. In some case, the location of the administrative headquarters and sub-headquarters has undermined the park's efficiency this and would have increased its costs; not have occurred, had other sites been selected.

Besides buildings, the other large part of the infrastructure component was the delimitation and posting of park boundaries. MARENA, as far as the evaluation team could determine, appears to have achieved the delimitation of all boundaries of the protected areas within the Panama Canal Watershed, marking them with permanent monuments set by surveying crews. This delimitation is a major achievement of MARENA. MARENA also financed the posting of the park boundaries with plastic signs. Such signs are in themselves evidence of a government presence, presumably intended to discourage illegal actions within the park boundaries. By 2003, however, the boundary signs required renovation, first because they referred to INRENARE rather than to ANAM and, second, because many of them have deteriorated or have been stolen. The evaluation team was unable to make an evaluation of the quality of the signs themselves in comparison with other potential types of signs that might have been available. It can, therefore, only note, that the posting of boundaries is an essential part of park management and one that directly reflects the capacity and power of the park administration. If intruders noticed that park boundaries have not been posted or that the signs were in poor condition, they were likely to assume that the park administration lacked sufficient funds to exert effective control over the park territory. This was not, presumably, a message that the park administration wished to convey, especially to those who might be contemplating illegal activities within the park's boundaries.

Under the Parks and Reserves Protection Activity, MARENA was to equip the protected areas with office equipment, field clothes and boots and with vehicles, including four wheel drive pick-up trucks, motorcycles, boats and outboard motors. Field interviews with park staff and observations of the equipment available indicated that MARENA did provide this equipment and vehicles. Park staff praised the high-quality of most of the equipment that had been provided, especially the U.S. Army boots and clothing. They compared the U.S. made outboard motors, unfavorably with the more rugged Japanese outboards motors that are commonly utilized in Panama. As the original equipment purchased by MARENA has worn out, it has been replaced with equipment of poorer quality. The park guards uniformly, for example, denounced the poor quality of the boots and clothing which is currently being provided to them, financed by funds from the FIDECO trust fund. Although seemingly a minor difficulty, the provision of unsuitable field equipment can seriously reduce the efficiency of the field staff of the protected areas as well as their moral. MARENA made purchases of vehicles, including pick-up trucks and motorcycles mostly in 1996. These vehicles by 2003 were, of course, breaking down frequently and were

expensive to repair and operate. There is no systematic process for replacing them expeditiously, although FIDECO funds have occasionally financed the purchase of new vehicles. See Table 6 below:

**TABLE 6**  
**Condition of Buildings, Personal Numbers, Vehicle Condition and Status of Park Boundaries**  
**in the Protected Areas of the Panama Canal Watershed, February 2003**

Protected Area	Buildings Condition		Personal Numbers		Vehicle Condition				Park Boundaries Adequately Marked (%)	
	Good	Poor	1997	2003	MP	Good	Poor	Req.	Yes	No
Soberania	10	1	16	10	25	0	5	5	0	100
Camino de Cruces	3	2	0	6	35	0	5	5	0	100
Chagres	12	1	30	17	60	1	7	9	0	100
Altos de Campana	13	3	25	9	10	1	4	5	0	100
Omar Torrijos	3	1	5	5	25	0	1	n.a.	n.a.	n.a.
Lago Gatun	8	0	6	8	25	0	5	5	100	0
Isla Barro Colorado	7-	0	17	17	n.a.	n.a.	n.a.	n.a.	100	0
Tobago	2	0	2	2	4	1	2	3	0	100
San Lorenzo	1	0	0	10	25	7	0	7	0	100
Portobelo	2	0	6	8	35	9	3	2	30	70

Source: Prepared by evaluation team based on interviews with park directors.

Under the **Park System and Reserve Personnel Activity**, the Government of Panama was to create and fill 280 additional staff positions. A final determination of the number, specific location and types of additional staff positions required by INRENARE in the national parks system was to be made during Project implementation. The additional staff positions required in the protected areas of the Panama Canal Watershed were determined in their management plans. The total park staff recommended by these management plans for the protected areas within the Panama Canal Watershed was 120. At present, however, the total staff of the Panama Canal Watershed protected areas is only 33.

The difference in staff numbers is perhaps largely due to budget restrictions. But there are other factors. The protected areas fall under the administrative control of the Regional ANAM administrators; they frequently assign park staff to other tasks and responsibilities. Some park staff have simply resigned, due to financially more attractive alternatives such as, for example, guards positions in the Barro Colorado Island Natural Monuments, where the monthly salary is \$800 per month rather than \$300 per month. Other park staff has requested reassignment to work sites that were closer to their homes in urban areas, leaving the protected areas closer to Panama City, for example, with many more park guards than the protected areas further away.

The result of these staffing problems is that the distribution of protected area personnel bears little relationship to the size of the protected area. Camino de las Cruces National Park, with an area of 4,000 ha, has a staff of 6; Altos de Camapana National Park with an area of 4,816 ha has a staff of 9; Soberania National Park with an area of 22,929 ha has a staff of 11. Meanwhile the Chagres National Park, with an area of 129,600 ha, has a staff of only 17. The intention of the

Park System and Reserve Personnel Activity, in sum, has not been fulfilled: current staff levels, as in 1991, are inadequate and the location of the existing staff does not correspond entirely to park requirements.

Under the Park System and Reserve Personnel Activity, MARENA was to finance in-country training for national park system personnel in park management and protection. In 1998 CATIE provided such training for 150 park guards and in 2002, RCE trained 50 park guards. Based on the documentation and a few interviews with park guards, both training courses were apparently useful. Rapid turnover of park personnel, however, has limited the long-term benefits of this training for park protection.

The **Policy and Planning Activity** was to assist INRENARE to complete the drafting of a National Parks and Equivalent Reserves Law and in to develop policies and plans for its implementation. The law was to define the criteria for classifying each type of reserve and was to set standards for their use, as well as to define private land conservation mechanism. Chapter II of the 1998 National Environment Law refers to protected areas and biological diversity. Article 66 creates the National System of Protected Areas (SINAP), under the regulation of ANAM. Subsequently a regulation for the protected areas has been prepared that defines the different types of protected areas. The evaluation team, however, could identify no specific support in the MARENA project files related to the preparation and approval of Law 41.

Table 7 compares MARENA's proposed and actual activities in its Component 2, National Park and Wildlands Management Component.

**TABLE 7**  
**Status of MARENA's Proposed Activities under the National Park and Wildlands Management Component from 1991 to 2002**

Activities Proposed in 1991	Status of Actions in 2002
<b>Parks and Reserves Protection</b>	
Management plans prepared for 14 protected areas	Preparation of 13 park planning documents.
Boundaries of 14 protected areas marked/posted	Boundaries of 5 parks marked.
Construction of park structures	Construction & equipment in 5 parks.
<b>Park System &amp; Reserve Personnel</b>	
34 administrators and 196 rangers trained in park management/protection	Training of 200 park staff.
<b>Parks &amp; Reserves Management</b>	
Baseline data on 14 protected areas in computer data base	No baseline data in data base.
Areas resurveyed after 3 years to analyze trends	No areas resurveyed.
Training in CDC techniques	INRENARE staff trained in GIS.
<b>Policy &amp; Planning</b>	
Draft National Parks Law	Law 41 includes article on national system of protected areas.
Define private conservation mechanisms	Assistance to INRENARE for preparation of 1992 Ley 24 Incentives for Reforestation.
Analyze & change park classifications	Classification included in Law 41.

Source: Prepared by evaluation team based on project agreement, USAID files and interviews, February 2003.

## REVIEW OF COMPONENT 3: CONSERVATION FOUNDATION

### *Component Purpose Statement*

The purposes of this component were to: 1) endow a Conservation Foundation (NATURA) with a permanent source of funding in the form of a Conservation Trust Fund whose income would finance the activities of both public and private organizations and 2) strengthen the institutional capacity of the Foundation to manage the Trust Fund as well as assist local NGOs and rural communities to carry out sustainable agriculture, environmental education, and reforestation programs. The Project Agreement originally provided \$9,250,000 to this component. This amount was later reduced in order to support a reforestation activity. Under the last amendment, the revised final total life of the project budget was \$8,859,000.

### *Summary Statement of Programmed Activities*

In order to accomplish the Component's purposes, the two major activities to be carried out by the Fundación NATURA were: 1) foundation creation and 2) local NGO development. Regarding the foundation fund, termed FIDECO (Fideicomiso Ecologico), this was a Panama first effort to create a permanent support mechanism to directly promote conservation, development, and educational activities at the local level. For FIDECO, NATURA was to organize a high-level board of trustees comprised of members from the public and private sector and to staff a small team to do fund management and supervision. FIDECO was also to be assisted by a volunteer technical committee of respected experts. In addition, FIDECO formed another Panama first through its provision of annual financial assistance to national parks and protected areas maintenance, operations, and protection costs. As originally proposed under this "debt swap" endowment, TNC was to utilize \$10 million to purchase GOP commercial debt; USAID was to contribute \$8 million to the swap; the U.S. and NGOS would contribute \$2 million, and the GOP was to exchange debt for new Conservation Bonds at approximately \$50 million in value. Based on the original estimates, an annual fund of \$2.5 million for 30 years was to be provided.

For the second component, selected local NGOs were to receive technical assistance and training to among other activities, assist them in applying for and managing the fund's projects. Special attention was placed on promoting sub projects for sustainable agriculture, environmental education, and reforestation.

### *Activity Assessment*

Initially, considerable time was required to formalize FIDECO. The debt swap's original premise and arrangements did not prove viable and after considerable efforts, in late 1994, the direct capitalization of a trust fund was chosen. This required the GOP to contribute \$15 million, TNC was to serve as the Trustee to contribute \$2 million, and USAID, \$8 million. Apart from this delay, during this early period much was learned regarding the special work required to develop and approve good projects. While NATURA was developing the operational systems, considerable local-level promotion and preparation time was required, because, as one leader stated, "bio-diversity conservation is difficult in poor areas."

FIDECO was launched in 1996 and the first sub-projects were approved July 1997. Since then and to June 2002, NATURA has approved 70 projects and a similar number of projects are under study. The approved projects total \$3,373,525. The detailed listing is provided in Attachment 6. Over the years, the programmatic areas have changed, based on donor guidance. Table 8. reflects the portfolio distribution under current programmatic areas with "agroforestry and sustainable forest management" employing 70 percent of the FIDECO fund.

**TABLE 8**  
Programmatic Distribution, Percentages and Dollar Amounts of FIDECO Grants, July 1997 to June 2002

Programmatic Area	No of Projects Approved	Percentage of Total Projects	Amount (US\$)	Percentage (US\$)
Agroforestry and sustainable forest management	50	71	2,376,560.52	70
Protection and Conservation of Biological Diversity	12	17	545,413.03	16
Prevention of Pollution	2	3	105,400.00	3
Management of Protected Areas	2	3	163,175.00	5
Ecotourism	4	6	182,977.00	6
<b>Total</b>	<b>70</b>	<b>100</b>	<b>3,373,525.55</b>	<b>100</b>

Source: Evaluation team based on data from Fundación Natura.

FIDECO's other main function is to provide 50 percent of its yearly funding to support the national parks and protected areas. Over the years, this has become an increasingly difficult and sensitive matter. Tensions are increasing, due to declining GOP budgetary support to ANAM, an increased number of parks to serve, and the decline in value of the investment portfolio. It should be noted that the original income levels of \$2.5 million were never achieved, and over the last year, incomes dipped to \$1.8 million and \$1.5 million respectively. Table 9 presents the funding levels and percentage breakdowns trends. The most sensitive fund management issue relates to the trend toward increased "operations" support to the large levels for current costs, such as gasoline and meals.

**TABLE 9**  
FIDECO Investments According to Programmatic Area and Year

Year	Maintenance		Operations		Protection		Total
	\$	%	\$	%	\$	%	\$
1998	304,994	40.67	268,118	33.75	176,888	23.58	750,000
1999	337,400	44.99	308,346	41.11	104,254	13.90	750,000
2000	316,872	42.25	331,008	44.13	102,120	13.62	750,000
2001	301,043	40.10	361,861	48.20	87,096	11.60	750,000
2002	130,207	28.00	170,180	37.80	149,613	33.20	450,000
2003	106,851	23.70	174,224	38.70	168,925	37.50	450,000
<b>Total</b>	<b>1,497,367</b>	<b>36.62</b>	<b>1,613,737</b>	<b>40.62</b>	<b>788,896</b>	<b>22.23</b>	<b>3,900,000</b>

Source: Triennial Evaluation of the Ecological Trust Fund of Panama (FIDECO). Final Report, 2001.

The NATURA's NGO support role, the organization also helped strengthen the institutional and technical capacities of various NGOs and related groups. In 1998, NATURA established an Institutional Strengthening Program, which focused specifically on sustainable renewable resource management. The Program has benefitted more than 2,000 people from 450 organizations.

**Schematic Status Report**

**TABLE 10**  
**Summary of MARENA Proposed and Accomplished Activities in Conservation Foundation**

MARENA Project "Out Put" Activities	Actions Undertaken
NATURA board of directors, technical staff, and executive director in place	Done and staffed by highly regarded personnel
Trust Fund is capitalized and Foundation is disbursing for projects	Fund was established, albeit in different system, which is at full pace
The clearing and degradation of forest land is controlled and productivity increased.	Land degradation has been somewhat detained but Foundation's special role not clear in this regard.
Total tree plantings equivalent to 6,000 has. will be established with 600,000 seedlings.	Foundation NATURA facilitated over 1,000 has. and ARI over 12,000.has Numbers from other sources unavailable.
50 sites in buffer zones and critical watersheds trees will be planed and sustainable farming practices adopted.	While more than 50 FIDECO projects have elements that meet this criteria, "sustainability" in institutional and economic terms not yet occurring.

Source: Project Agreement and evaluation team.

**Concluding Observations Related to Current and Future Needs**

The team was provided with the comprehensive management review and financial analysis of the FIDECO project to include stakeholder surveys. This was completed in June 2001, and the most significant recommendations appear to have been addressed. Opportunities were taken to visit a small number of FIDECO sub projects and to meet with benefactors. The team conducted a brief survey of 12 project participants from Trinidad, and while generally positive responses were received, there is need for more systematic technical assistance and other service elements as noted (Refer to Attachment 6).

In many meetings held during the evaluation with MARENA stakeholders, two observations were often shared: 1) the importance of establishing a permanent funding source to provide initial responses addressing local environmental needs; and 2) the significant important role that FIDECO plays in stimulating a real public/private sector dialogue towards a more shared national concerns.

NATURA has reflected on this increasingly positive experience and appears to be taking stock of its various activities. They have instituted a mid-term strategy exercise to reflect how best to advance. Moreover, the NATURA leadership recognizes that there is much more that must be done to begin to generate greater impacts. Among the many initial ideas discussed is the need to take stock of the special challenges associated with "sustainability" in both economic and institutional terms. This forms a fundamental structural hurdle complicated by the pervasiveness of the country's prevailing poverty, a topic that is of considerable concern and under discussion.

This is a systematic stock taking review of accomplishments and needs, from which broader and more sustainable impacts will occur.

### **MARENA Funding**

Table 11 indicates that USAID/Panama's contribution to MARENA, as of December 31, 2002, was \$23,254,486, including a pipeline of \$611,215. The total project cost as of December 31, 2002, has been \$46.5 million.

**TABLE 11**  
**MARENA PROJECT Financial Status Report, December 2002 (US\$)**

<b>Fiscal Year</b>	<b>Obligations</b>	<b>Net Accrued Expenditures</b>	<b>Pipeline</b>
1991	10,000,000	10,000,000	0
1992	3,000,000	3,000,000	0
1993	2,000,000	2,000,000	0
1994	1,000,000	999,364	636
1996	1,257,553	1,205,354	52,199
1997	742,447	742,379	68
1998	800,000	799,735	265
1999	1,569,900	1,547,796	22,104
2000	1,445,000	1,151,133	293,867
2001	1,439,586	1,197,510	242,076
<b>Project Total</b>	<b>23,254,486</b>	<b>22,643,271</b>	<b>611,215</b>

Source: USAID/Panama Project Reports.

The GOP was to finance \$7 million in counterpart financing for MARENA and contribute \$15 million from a debt-for-nature swap to the FIDECO fund. The GOP furnished the agreed upon counterpart funds through 1998, until ANAM absorbed INRENARE. Then accounting for counterpart funds became unclear. The debt-for-nature swap proved infeasible, but the GOP donated US\$15 million and the TNC contributed US\$2 million to the FIDECO fund.

### **REVIEW OF COMPONENT 4: OTHER DIRECT COSTS**

This component served as the principal mechanism for providing basic support and management services and for an expanding number of MARENA project support activities. From the original agreement, \$1.1 million was provided for project management, evaluation and audit services, and inflation estimates. By the last project amendment, the revised final total for the component had increased to \$5.27 million.

The principal expenditures under this component have been for staff project management support expenses estimated at over \$1.7 million, the environmental communications and evolving umbrella support contracts with the Academy for International Development (AED) have been for over \$3 million, and the NGO environmental education training activities with CICA.

## C. OVERVIEW OF THE PROPOSED AND ACTUAL END OF PROJECT STATUS INDICATORS

This schematic overview provides a user-friendly "tracker" of how the initial indicators fared over this long period. While a good many of the indicators are still valid, and it is further noted that many of the status indicators were in place when the original PACD was met. However, in some cases due to major organizational adjustments associated with the Canal transfer or with the legislation that led to INRENARE's being absorbed by ANAM -- these indicators subsequently were not able to be at the precise level that was originally programmed. Budgetary shortfalls over the recent years also have caused problems, as the original project purchased equipment became obsolete. Nonetheless, the team notes with great satisfaction that the indicator status, "encroachment in the reserves of the PCW has largely been halted..." See Table 12 next page.

TABLE 12  
Comparison of Planned and Actual End of Project Status, MARENA Project

Planned End of Project Status	Actual End of Project Status
Management of the Canal Watershed will be coordinated and supervised by INRENARE and implemented through collaborating government agencies and NGOs	Management of the Canal Watershed being coordinated by the Inter Institutional Commission for the Watershed (CICH), under the auspices of the Panama Canal Authority. ANAM is one member of the CICH.
Public lands within the Panama Canal Watershed will be protected, and private lands will be zoned and soil conservation land use practices introduced.	Public lands within the Panama Canal Watershed are protected except for the forestlands on the west side of the canal (Corridor of the Americas). Private lands have not been zoned. Some agroforestry practices have been introduced but not soil conservation practices.
A capability to perform environmental assessments will be established in INRENARE.	ANAM has the capability to approve or disapprove environmental assessments prepared and presented by consultants.
The boundaries of 11 national parks and three reserves will be marked. Park staff will be trained, equipped and permanently stationed in the parks and reserves.	The boundaries of the 7 protected areas in the Panama Canal Watershed were marked but require remarking. 200 park guards were trained but many of them no longer work for the park service. Park staff was well equipped but now vehicles are breaking down. Equipment bought with FIDECO funds tends to be of poor quality as a cost saving measure
A total of 9 park management plans will be prepared and implemented along with 5 existing management plans. Encroachment by agriculture and other inappropriate land users [sic] in these reserves will be halted.	A total of 3 management plans and 10 other planning documents were prepared. The Action Plans were partially implemented but only a few of the proposed action in the management plans and other plans have been implemented. Encroachment in the reserves of the PCW has largely been halted but continues in other reserves.
Private landholders and community groups in buffer areas surrounding parks and reserves will have planted 6,000 ha of trees for fuelwood and other local uses, and will be utilizing sustainable agricultural and improved grazing practices.	No complete list of all the ha that have been planted is available. The team is aware of ARI's and FIDECO's efforts and report out.
The NATURA Conservation Foundation will be operating with adequate long-term funding for park protection and sustainable development in the Panama Canal Watershed, rural communities and buffer areas of the National Parks.	Fundacion Natura operates the FIDECO fund which is providing about \$450,000 yr divided equally between park protection and sustainable development in the Panama Canal Watershed, rural communities and buffer areas.

Source: Project Agreement and evaluation team.

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## SECTION IV

### RESPONSES TO THE SCOPE OF WORK QUESTIONS

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This section discusses the questions presented in the SOW, based on their consolidation into four broader questions.

- 1) *What was the degree of implementation and consistency with the original overall design, End-of-Project Status, and the Mission's current Panama Canal Watershed SO?*

MARENA assisted Panama to establish a government presence in the protected areas of the PCW and thus to protect, for the most part, their ecological integrity in the face of numerous threats. To a major degree, there was considerable consistency between the design intentions and what occurred, particularly during MARENA's first half of operations. Although due to the Canal transfer activities and Law 41, INRENARE did not become the principal coordinating institution for the management of the PCW, it did lead the first effort to achieve such coordination and presently plays a role in the planning and coordination efforts of the CICH. The lack of financial resources and the increasing decline in staff resources and technical judgments is beginning to weaken ANAM's ability to protect and manage the PCW protected areas, as well as the rest of the national system of protected areas. MARENA's focus on the PCW protected areas has limited its contribution to the operation of the National System of Protected Areas.

- 2) *What were MARENA's successes and problems, as perceived by public and private environmental sector and rural beneficiaries?*

Public institutions perceive that MARENA provided the critical investment and operational funds, technical advice and training that enabled INRENARE, and then ANAM, to establish the government's presence in the protected areas of the PCW, and thus to limit the extent of the conversion to other uses. At the field level, some park service staff questioned the permanence of MARENA's contribution to the establishment of functioning protected areas, since they now personally perceive the deterioration of park infrastructure and equipment, to be due to the lack of financial resources. They do, however, recognize that the FIDECO fund financial resources are presently a principal support for the operation of the protected areas.

Private sector environmental NGOs perceive MARENA as being successful in channeling funds, through FIDECO, to support a variety of innovative field projects that combine conservation and economic benefits in poor rural areas. The FIDECO fund has permitted many enthusiastic and dedicated professionals throughout Panama to implement new conservation ideas, in collaboration with the people whose land use practices, due to the lack of alternatives, may cause the degradation of natural resources and the environment, both within and outside of protected areas. The NGOs generally regret that the project financing is for too short a period and too little, thereby restricting their ability to follow up on their initial successes or to improve on the basis of their mistakes.

The rural beneficiaries' perception of MARENA reflects their experience in participating in the FIDECO community and NGO projects. The rural beneficiaries, who are often extremely perceptive even though they are not well educated or financially well off, believe that such projects ally them to institutions that can assist them to organize, to represent them before governmental institutions, to channel some immediate financial benefits into the community direct payments for conservation work, and to increase the productivity of their agricultural enterprises through the introduction of new technologies. At the same time many are distressed regarding the GOP "control" positions, which they believe do not convey adequately their realities, do not reflect the increased challenges, and offer only limited discussion and program response.

**3) *What were the major institutional attributes/constraints and external dynamics that impacted and influenced project performance?***

The principal institutional attribute that influenced project performance involved the absorption of INRENARE into the broader institutional structure of ANAM. As a result of this institutional change, MARENA project performance became dependent on the functioning of a new institution that was structured to respond to broader environmental responsibilities than those of INRENARE, while it lacked an adequate budget and was sometimes subject to political influences. For the protected areas in and outside of the PCW, the results of this institutional change were declining budgets and rapid personnel turnover. By 2002, this institutional change was beginning to reduce the ability of the park administrators to protect and manage effectively some of the protected areas in the PCW, thus putting at risk MARENA's investments in their infrastructure and personnel.

**4) *What were the overall weaknesses/obstacles and strength/effectiveness of the program's strategy and the implementing and coordination mechanism?***

In retrospect, MARENA's principal strategic weakness was its over-reliance on public sector financing for the operation of the PCW protected areas. Through much of the project, the national government was frequently unable to provide the protected areas with sufficient financing to maintain them fully staffed and operationally functional. The emphasis of Law 41 and its supportive provisions provided under IDB's PAN to enhance private sector linkages -- is timely. On the other hand, the FIDECO fund that MARENA created proved to be effective in maintaining the basic level of operations in the PCW and in other protected areas. By 2002, the protected areas, both in and outside of the PCW, unless they received external financing from international institutions, were depending mostly on FIDECO funds to finance their day-to-day operating and maintenance costs, other than personnel salaries. Thus, through FIDECO, MARENA established a long-term initial means for supporting the protection and management of the protected areas; the new challenge is to move more quickly in new support areas.

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## SECTION V

### CONCLUSIONS

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The CICH, which now plays the pivotal institutional role in the coordination of PCW watershed management activities, must make PCW watershed management responsive to the economic and social impacts of such trends as the population explosion into the Inter Isthmus Corridor, and the American Free Trade Zone. A loan from the IADB is presently financing the development of ANAM's administrative, personnel and financial systems and procedures

Originally MARENA placed special emphasis on improving management, finance systems and operations, as well as technologies in order to generate field impacts. Today, however, governmental agencies increasingly are given broader mandates, requiring different support mechanisms while addressing multiple objectives. While a vital national contribution was performed from Law 41 and ANAM's enabling legislation, in the context of the special attentions required for Panama's fragile renewable resource base, there is the real potential for some activities to result in a diminution of impact and importance. This is due to: 1) the realities of leadership and management responsibilities over a much broader portfolio; 2) GOP budget realities in relation to portfolio responsibilities, and 3) the increased range of necessary support activities surpass ANAM's current focus. Some of the critical areas needing attention relate to park concession strategies, forest and wood products management policies, "buffer zone", or more relevant adjacent area economic development strategies, well developed eco-tourism standards regarding land use planning, and construction activities, and agro-forestry development.

This exercise can now begin to highlight important "outcomes" during a period of great change. Under various regimes, both USAID and the GOP stayed this first generation "sustainable development" course, which increasingly links directly with Panama's specific Canal management responsibilities and with broader global commerce.

When MARENA's original expectations are evaluated from advances made in relation with specific outputs and other indicators, its full consequences are not fully apparent. Now we know that from this effort, a national park system has been formed, albeit incipient. In 1985, when the MARENA approach was first proposed, Panama was just concluding its "agricultural frontier" and was suffering from severe environmental consequences. Today, in areas of immense strategic importance such as the PCW, deforestation and encroachment are being slowed remarkably, as parks have formed an initial protective "shields." The earlier associated threats of pending doom proved to be highly overstated. But the "guard" cannot be lowered as to what seems to be occurring. In effect, while precious time was purchased, in light of the insidious nature of the challenges and the disastrous consequences -- if not done well, forward momentum can be easily reversed. Some unfortunate trends in that regard are already noted.

Since a strategically vital watershed and interrelated eco system now contains one crucial element for continued improved conditions -- many now see for the first time prospects for expanded more sustainable land use, to include eco-tourism. Many perceive that more productive enterprise shifts would generate more sustainable and remunerative returns essential for Panama's growth. Fundacion NATURA and the permanent funding mechanism provided by

FIDECO and the numerous NGO collaborators and project recipients form an initial base of first time benefactors. The breadth of experiences employed over such an extended period by the US, and the Panamanian Governments, as well as highly acclaimed research groups, NGOs, and universities -- have joined to produce one of the world's most comprehensive data bases on sustainable watershed management.

MARENA, of course, can only take partial credit for these achievements. However, after considerable efforts and many years later -- when these original Project indicators that were assessed" are now again compared with MARENA's original Purpose to "protect and manage Panama's renewable natural resources, with particular attention in the PCW" -- regrettably there are still major shortfalls. The early thrust was to create the parks as the first defense. By comparison, yesterday's challenge was easier, due to the understanding and focus provided by verifiable indicators wherein "protected" resources could be focused.

Today, and in the context of MARENA's original Purpose, Panama now has a series of extremely valuable, newly protected "islands." These are now, however, surrounded by increasingly high incidences of poverty and an almost intractable rural economy that is generating at a minimum, a permanent threat. These land users are usually poorly equipped to shift to more remunerative, market-based land use endeavors that provide more viable economic contributions. In the context of "park "sustainability," the GOP's budgetary situation, and international experience -- the amelioration of such impediments over time also relieves park stress.

Today's needs require therefore a more multi-faceted approach that views sustainability from a two-sided "coin," encompassing both environmental and economic sustainability. Little systematic work has been initiated in Panama to truly internalize these new realities in a way where the requisite strategic, institutional and programmatic shifts could begin to move forward.. Fortunately as reported, some of the bases are beginning to form, as a result of developments within the GOP and some donor projects. For the more multi-faceted challenges linking environment, economics and markets, and related social dynamics, some fledgling programs are emerging; and ACP, MIDA, and ANAM are increasingly aware that creative non-traditional thinking is urgently required. CICH and USAID and other donors are in a critical position to hopefully provide the best guidance and support framework for the PCW.

From an area focus perspective, the critical battleground is still within the PCW, where a world-class series of centers and agencies with strong commitments are already in place. The land use experiences learned here however, to include park management approaches, must begin to be learned elsewhere and quickly. At the same time, there is a need to move forward under a new strategic framework and support base in order to maintain the nascent park system in place, and at the same time growing where appropriate.

As required under the SOW, the team will now attempt to move the agenda forward with the provision of broad strategic, focused lessons learned.

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## SECTION VI

### LESSONS LEARNED

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MARENA provides USAID/Panama with the following salient lessons for the design of its natural resource and environment strategic framework.

- 1) *USAID/Panama funds for protected areas optimally are directed to institutions that have the structures required to support their technically competent, non-political management.*

MARENA's experience indicates that national protected areas can become an effective component of watershed protection and management if adequate institutions are established and financed. However, if institutional structures themselves limit effective action, then external financing may not produce increased levels of protection and management in protected areas. *Without an effective institutional structure, external funds begin to produce redundant planning documents and technical reports rather than permanent, replicable results in park protection and management that conserve the environment and natural resources, while improving people's lives.*

INRENARE's institutional structure, combined with MARENA's financial and technical support, enabled it to establish a field presence in the PCW national parks and to bring under control the principal threats to their integrity. The rate of deforestation and hunting diminished, while the immediate and general public gradually became more aware and supportive of the purpose and usefulness of the national parks, at least in the PCW. By contrast, the differently cast ANAM structure may find special difficulties which are caused in part by its comparatively longer lines of authority, multiple responsibilities, non-technical orientation, and decision-making difficulties.

- 2) *The management of the Panama Canal Watershed is the decisive factor in the success or failure of natural resource and environmental management at the national level.*

MARENA's experience shows that the resolution of Panama's environmental and natural resource problems nationally requires successful protection and management of the Panama Canal Watershed. If Panama can protect and manage the PCW, then it has the basis to protect and manage its environment and natural resources nationally. On the other hand, if Panama fails to protect and manage the PCW, in spite of the financial and technical resources that are being made available, then it is unlikely that it will be able to reverse the deterioration of natural resources and the environment nationally. Thus the PCW serves as the linchpin for natural resource and environmental protection and management in all of Panama.

MARENA began the interdisciplinary focus on the PCW protected areas that eventually led to the establishment of CICH. It also provided sufficient funds over a long enough time period to permit the national parks to become established and to prove themselves to be an effective means for protecting a large percentage of the PCW water resources. MARENA's financial support for NGO forestry, agroforestry and ecotourism projects in and close to the PCW parks, provides experiences, which can be developed and improved. ANAM's contribution to the

watershed management efforts that are being coordinated by CICH can serve as an example for other Panamanian watersheds, as can the relationship between municipal water supplies in the Trans Isthmian Corridor and watershed management. Likewise, the lessons learned from environmental education and communication programs in the PCW, can serve to guide such programs in other parts of the country. In sum, MARENA provided the means for Panama to work on developing the institutional and technical basis for the protection and management of its environment and natural resources in the PCW. The PCW already is beginning to serve as an example for the rest of Panama.

- 3) ***Inextricable links exist between national protected areas and surrounding privately owned land that make it advisable to support concurrent, focussed, technically sound and coordinated actions to protect and manage natural resources and environment in both settings.***

MARENA's experience has demonstrated that while parks may be a useful, sometimes even an essential, component of protecting and managing a watershed, they are neither sufficient in themselves nor are they isolated from the private lands that surround them. Protection and management of the natural resources and environment in a watershed therefore, requires that effective measures be taken to improve land use practices on private lands. Otherwise, the deterioration of the natural resources and environment on private land may negate the environmental benefits that result from protecting and managing the park. Moreover, it will prove difficult to maintain the integrity of a park in Panama, where the rural population depends at least partly on agriculture, if the agricultural productivity of the surrounding private lands deteriorates. A growing population will demand access to the fertility of forest soils. It is likely that eventually a democratic, periodically populist political process will satisfy their demands at the expense of the park's biological integrity.

MARENA funding has stimulated measures to protect and manage natural resources and the environment on private lands outside of the parks. The constant demand for FIDECO funds, from NGOs, communities, and individuals, in order to implement a wide range of projects, has demonstrated the widespread interest of rural people to combine production with protection, and also demonstrates the technical knowledge, organization capacity and dedication that they bring to such projects. Although no thorough technical evaluation of these projects yet exists, the projects certainly provide a basis for systematically strengthening the positive links between parks and their surroundings.

The results of the MARENA financed field projects, however, demonstrate that no matter how small a project may be in financial terms, time period, or geographic area, it should be carried out in such a way as to assure the highest technical standards. Projects serve no purpose if they fail because of poor technical supervision. In such instances, the "beneficiaries" waste their time and become disillusioned, funds are wasted, protection of natural resources and the environment is not achieved, and technical knowledge is not gained.

MARENA's experience with FIDECO projects also indicate that these projects should be designed and selected based on criteria that ensure clear links with specific objectives related to the protection and management of a watershed. The very limited financing available to FIDECO

for projects and the small size and limited duration of the projects means that they will only be significant if they are focused on a common objective. Given the restricted funding available to parks, it makes sense for the FIDECO projects to focus on the resolution of problems that threaten the integrity of the parks. Otherwise, the FIDECO projects become simply an uncoordinated, unfocused collection of small activities that respond more to the particular interests of NGOs or communities than to an overall strategy.

**4) *International economic trends have a predominant influence on Panama's natural resources and environment.***

Analyses financed by MARENA demonstrate that international economic trends have a predominant influence on Panama's natural resources and environment. The Panama Canal itself is a symbol of the growth 100 years ago of the United States' commercial and associated strategic interests. These interests continue. Now, however, the canal's watershed is recognized as a vital component of the canal's strategic value. Measures to protect and manage Panama's natural resources and environment will be futile unless they are designed within the context of such international economic trends. The opportunity cost of using the limited development funds available to resolve the natural resource and environmental degradation can be high. Some environmental degradation is irreversible.

MARENA's experience with forestry and agroforestry provide lessons in how to avoid financing activities that do not take into account international economic trends. The 1999 STRI-ANANP-USAID study, for example, clearly indicates that there is a strong trend towards the abandonment of pastureland in the Panama Canal watershed since Panama cattle producers cannot produce beef as cheaply as can their competitors in other Central American countries. Field observations confirm that the watershed has a large proportion of abandoned pastures covered with natural regeneration of native species. In spite of this trend, however, MARENA financed ANAM, TechnoServe and FIDECO to plant native species of trees, sometimes to replace natural regeneration, possibly of the same species that were being planted. Similarly, the management plans for the PCW parks financed by MARENA make almost no mention, nor plans for profiting from the world wide boom in nature-based tourism, even though several hundred thousand travelers per year pass through Panama. Likewise, many of the FIDECO agroforestry projects promote coffee production, even though the world market and even the "niche market" for coffee is flooded and coffee prices are at all time lows. Projects that buck such international economic trends absorb limited funds, produce no lasting results and disillusion the very people, such as private landowners, whose support is so critical to achieving the protection and management of natural resources on a significant scale.

**5) *USAID/Panama is able to play an important role in assisting Panama to protect and manage its natural resources and environment by developing a focused, coherent program with clear objectives and adequate technical oversight.***

The MARENA experience demonstrates that USAID/Panama has latent possibilities for playing an influential, central role in improving Panama's ability to protect and manage its natural resources and environment. Panama has internationally significant water and biological resources. It has welcomed international assistance in establishing the institutional, financial and technical basis for their protection and management. USAID/Panama has the ability to bring a

wealth of domestic and international experience to bear on the resolution of the obstacles to such protection and management.

MARENA established administrative mechanisms to tap the vast technical resources of the United States national government, international training institutions and United-States based international consulting firms. The Smithsonian Tropical Research Institute, the U.S. Park Service and the U.S. Forest Service, for example, provided years of technical advisors to INRENARE and ANAM. MARENA funds were utilized to contract consulting firms for specialized advice in watershed monitoring and participatory planning and CATIE to provide training to park guards. USAID/Panama itself contracted the purchase of equipment and the construction of park infrastructure. Much of this technical advice and training resulted in improved natural resource and environmental management. For a time, USAID/Panama was the leading international institutions involved in Panama's natural resource and environmental sector.

MARENA did not, however, provide the mechanism for USAID/Panama to significantly and permanently reverse the trend towards degradation of Panama's natural resources and environment. Ten years after MARENA commenced its work, many of the conditions in the national parks that existed in 1991 are returning: boundary lines needed remarking, equipment has become too old to be serviceable, park staffing levels have declined rather than grown, and the parks face constant financial constrains. In order to maintain the value of the investment it made in Panama's parks through MARENA, USAID/Panama needs to once again demonstrate its ability to first design and then implement a hard-driving, focused, technically sound, convincing natural resource and environment program. Although technical capabilities can be contracted, such a program requires the permanent presence in USAID/Panama of an experienced, technically experienced staff who adequately covers the range of specialties that such a program will require, in order to maintain its momentum, stay focused on its objectives, and identify technically sound interventions.

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## SECTION VII

### RECOMMENDED APPROACHES

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#### BACKGROUND

From these lessons learned, today's challenge is to respond to MARENA's still legitimate project purpose with a new, multi-faceted thrust, which is in sync with the new millennium's demands and prospects. Appropriate interventions and support activities taken now will reap benefits in the PCW, for Panama, and for the evolving global commerce system. The STRI-ANAM-USAID Watershed Monitoring Project documents the PCW's capacity to adjust rapidly to sudden nature or human caused provocations. An example was the timely launching of the Chagres National Park in 1984, which was instrumental in containing severe natural resource degradation.

The strategic approaches herein proposed are based on this reality. They were developed as a result of extensive conversations with appropriate leaders, experts, park guards, and land users. These stakeholders perceived their environment to be changing radically, and often stated how untenable the status quo was, and expressed the need for some basic skills to help ameliorate natural resource degradation, which they knew to have dangerous consequences.

Current PCW land dynamics set the new stage for framing an over-arching paradigm, responsive to MARENA's Project Purpose. Basically in the PCW, 50 percent of the land area is under public management and 50 percent is in private hands. The daunting challenge is to create the structure, so that within the Watershed, strengthened authority and control would protect the park, while on a parallel track, private land use practitioners would help reduce the destruction while creating economic opportunities by generating more remunerative income and employment opportunities. At the same time nationally, while lessons- learned are gleaned and implemented, creative efforts are mobilized, so that the existing park structure can be maintained, while also facilitating similar new park/rural area linkages and growth that is mutually supportive. As presently viewed by the team, such major shifts will not happen unless a multi faceted support effort is mounted.

Four strategic approaches along with related illustrative examples are provided. These are provided to stimulate discussion with the goal of introducing substantive change.

#### RECOMMENDATION 1:

*Strategic policy, planning, and program interventions should be undertaken to stimulate a more favorable enabling and working environment and to introduce more aggressive and sustainable change*

In order to help form the enabling conditions for stimulating land use shifts and related support investments for more aggressively stimulating the natural resource management agenda, a series of major legal and policy related activities appear to be needed:

**Updating the PCW land use policy:**

Law 21 signed in 1997 forms the legal land use authority for the "traditional" Canal. It provides dramatically different enterprise shifts from what was/is currently practiced for 2020. Of concern for a USAID consulting firm with extensive work in the PCW and for others, is that this plan seems to bear little relevance to current market dynamics. Furthermore, as presently construed, it excludes 60 percent of the total PCW and does not include the land covered in the Western Region. Additional consultation in regards to the above observation would be required.

**Rethinking "buffer zone" strategies:**

MARENA designers placed great importance on the introduction of buffer zones as a means of reducing intrusions by poor people into the protected areas. Little was however done and coincidentally, today it has far greater relevance. While FIDECO's first generation of somewhat related experiences showed initial producer response to experiment, it is now apparent that more market driven and technically sound projects are required. There is a need to learn from these and from other similar experiences, and therefore a review of experiences and actual economic and development benefits, as well as new ways to respond to the original objective, should be considered.

**Assisting the "Plan Panama Rural" strategic planning effort:**

The rural economy is going through one of Latin America and the Caribbean's most difficult times. This constrains macro growth and generates land stresses on an already extended environment. The situation will only worsen in the context of the FTAA's launching. MIDA has a strategic planning exercise now underway which can hopefully begin to help strategically address huge challenges. In comparison with many Central American countries, Panama appears to be less advanced in appropriate FTAA strategic thinking for its already vulnerable rural sector. USAID assistance would likely be of great national benefit.

**User-friendly data and related applied research to help spark sustainable development:**

CICH is required to establish an Environmental Information Center to monitor conditions throughout the PCW. At the same time, there is a wealth of information from various PCW related activities to include soil and water and flora and fauna, land use, water quality and flow, environmental conditions over extended periods, etc.. Increasingly, socio-economic research and data are being assembled. A proposal by the Ciudad del Saber, "Panama Center for Sustainable Development", appears to respond to some of these needs.

**RECOMMENDATION 2:**

***USAID should consider creative institutional support strategies to improve coordination requirements and operational/performance***

Institutional efficiencies and operational effectiveness issues have been a constant issue under MARENA. The issues become of even greater importance when even broader issues must increasingly be addressed. The following are a few examples of matters requiring attention.

**Possible specialized technical assistance to CICH:**

MARENA's evolution demonstrates an increasingly complex array of issues and themes. International experiences with watershed management demonstrate similar inherent operational needs and difficulties. Here, the inherent challenges are of "TVA proportions." CICH must not

only work to "integrate forces and resources" via highly effective coordination with line units of mixed abilities. It must, in a two year period, be positioned to finance its own budget. Having access to a highly specialized USAID funded core group of experts could be a very important contribution during this initial period.

**Facilitate Fundacion NATURA and its efforts to confront "second generation" strategic challenges:**

NATURA has generated an impressive record of providing funding assistance under somewhat general and flexible guide lines developed by its donors. Little importance was placed on economic "sustainability." Clearly NATURA now recognizes that greater focus and improved technical assistance will be required, particularly for their expanding, and increasingly more economic development support portfolio. As they now go through their important internal strategy review process, possible "second tier" type services to include the development of market support services and access to specialized technical cadre are needed. This will require addressing increasingly complex sustainability and dependency issues in real terms. USAID assistance should be considered.

**New public private linkages for a more sustainable national park system:**

The present system confronts many notable limitations, which require attention. USAID has a special interest to help Panama look for more productive and dynamic park mechanisms that generate greater public and economic goods. The IDB's PAN is providing a significant effort to facilitate this need, but good models which derive the best from public private sector comparative advantages, while being respectful of national patrimony, are limited. Under a USAID funded endowment program in Costa Rica, the NGO FUNDECOR provided highly regarded park management and operations services in Costa Rica's key parks. They also provided related market and fund raising, research and training, community economic participation services, which were initially facilitated under a major endowment fund. This approach should be explored in regard to at least the high priority PCW-focused parks. Among the benefits, a successful arrangement would thus permit more creative ways than those pursued by FIDECO, in order to address the more GOP related national park costs and field operations. Under this arrangement, funds previously provided by the GOP to the non PCW areas would thus be "freed up" and made available.

**RECOMMENDATION 3:**

*The donor community and GOP should explore additional funding sources in order to expand support for environmental protection*

There exist tremendous opportunities, where limited additional resources could provide notable improvements. GOP funding sources are notable examples. The trend will likely continue. However in light of the special situations observed, creative measures must be explored. Some examples of such needs and alternative approaches are provided.

**ACP assistance to key PCW Parks:**

PCW parks provide many contributions to PCW well being. This trend will be expanded in the broader Western Region. FIDECO shortfalls caused in part by revenue short fall, result in funds being diverted from more productive park investments and purchases. Increasingly they create unneeded tensions and conflict in what increasingly needs to be a support operation based on

mutual support and trust. ACP's support, at least during this critical period, should to be pursued vigorously.

**Broader donor coordination and leverage facilitation:**

Donor "coordination" is discussed across all levels, but in its actual programming and operations, seems to be nothing more than lip service. To better serve the special institutional and development needs and Panama's expanding natural resource requirements, as well as the need for alternative approaches, particularly in the PCW and in the protected areas -- much greater coordination is required. This is perhaps an area to which CICH will have to dedicate more attention, and ANAM will have to conduct more strategically focused studies and evaluations

**FIDECO support:**

The above comments were provided to improve sub project operational support and future strategic focus. FIDECO is an increasingly important resource that may, particularly in the context of the above stated activities, be eligible for expanded USAID or other donor support. Logical potential areas relate to its possible role in a similar way that FUNDECOR performs for Costa Rican parks.

**Expansion of ANAM revenue generation program and the Caja Unica:**

Under Law 41 and as further supported by the IDB, numerous efforts are being explored to generate significant levels of external revenue for ANAM's services. Particular programmatic and operational attention is being cultivated for activities within ANAM's Protected Areas portfolio. Some of these have the potential to generate considerable resources and in that regard, should be managed in ways that a portion of ANAM's efforts directly benefits affected parks.

**Eco Tourism Support:**

All Central American countries are now aggressively following Costa Rica's lead in eco-tourism. Not only is this generating over \$400 million annually, but it has helped stimulate their increasingly larger tourism sector, which has become one of their lead/leading economic sectors. Numerous potential and some good current examples for expanded business were presented to the team, such as basic and selective improvements to the parks. Many ideas abound and one would hope that from last year's \$10 million promotion program financed by the GOP, business in this area will get a much-needed boost. Greater effort at product development and strategic marketing is required however and soon. There is a need to put some senior-level consulting services together to help develop the larger effort more systematically, and to use this as a base to mobilize investments. Clearly much more attention needs to be provided, so that eco-tourism's potential is not lost to inappropriate investments and construction, as has been increasingly the case. Furthermore, given the special presence of world renowned institutions such as the STRI and TNC, the possibility of promoting a "seal" type certification system is another way of promoting Panama's special features.

## **RECOMMENDATION 4:**

***USAID should provide the means for helping provide greater focus, support, and leverage for critical technical support services***

A variety of services were identified as critical and need to be introduced urgently. These cover increasingly critical services essential for selected rural residents to better utilize their resource base, so that greater sustainability is generated, specifically as it affects their economy. Some examples of key critical areas discussed include the following:

### **Developing more specific understanding and basic skills for agro-forestry:**

The necessity of developing skills for agro-forestry is a widely held belief. From the survey of the 12 producers participating in Trinidad with NATURA (refer to Attachment 6), their strongest suggestion was the need to have more technical training. The original concept that these systems generated essential food requirements while gradually generating increased incomes was generally agreed upon, but this concept lacked market response and better technical backstopping across the board. Although the Project Paper placed great faith in this activity, ANAM and MIDA experts agreed that the program was inadequate for including the appropriate relevant technologies from CATIE or from the Fundación de Honduras de Investigación Agrícola (FHIA.) There was a dearth of information as to market production costs and as to cultural and post harvest practices. NATURA representatives agreed in regards to these limitations. Urgent attention to this matter is required to include adaptive research and market requirements. USAID assistance, in collaboration with ANAM and MIDA, should be offered.

### **The provision of market services and producer organization arrangements to facilitate market participation:**

Market access constraints were also commonly listed as major constraints. MASAR is in the position of providing considerable levels of much-needed and long overlooked support to the PCW. Their program, however, has not provided for the type of critical market support services recognized as being essential for maximum economic growth. This service, of course, becomes even more essential in the context of the FTAA. While contemplated on a reduced scale, based on the conversations held, this service probably needs additional support that USAID is in the best position to provide. This could be an excellent accompaniment to MASAR: in addition, the need for local level facilitating services to improve marketing efficiencies for smaller farmers should be explored, in order to link expanded market opportunities which would, otherwise, be unavailable. In the context of MASAR's upcoming launching, these examples of critically needed complementary services need urgent exploring.

### **Environmental awareness activities seemed to be very prevalent:**

A broad range of education and promotion messages are provided by ANAM, the World Bank Biological Corridors project, NATURA and their FIDECO NGOs, the USAID support via AED and to CICA. While no judgment was made as to its program content and importance, it did seem that after so many efforts, at least a "best practices" study and consequent program streamlining could be carried out.

### **Forge new era integrated park management program support plans:**

The implementation of the current management plans completed under MARENA are urgently required by the parks. . These types of plans that also provide strategies to link park

management with local economic needs and with broader watershed management aspects. were a boon to parks in Trinidad and San Lorenzo. Such plans and their execution soon would begin to generate the positive response also observed in Chagres.

**A U.S.-Panama Environment Support Fund:**

Given the: 1) special nature of the diplomatic relationships enjoyed between the two countries; 2) the high interest and visibility that a program of this type should mobilize for broader benefits and investment stimulation; 3) the somewhat imprecise and dynamics nature of such an activity, compared with USAID's operations; and 4) uncertainties for USAID Panama beyond 2006 -- a special US Panama support fund might be created. Illustratively, this fund could be managed as a special service "Management Entity" provider with contractual and management services to function as a service implementer or coordinator, with sub contractors in specialized areas. This could function under a very senior panel of highly regarded leaders that would regularly convene, while also providing prestige. It could also report directly to CICH, where appropriate coordination and assistance services could be provided over at least a 10 year period.

**SUMMARY**

We have put forward these approaches to future donor, including USAID, assistance to Panama's environmental needs as suggestions rather than as an immediately actionable program. MARENA has demonstrated that significant success can result from well-conceived and executed USAID interventions. The team believes that by building on past results and "lessons learned" the U.S. can and should continue to play an important role in protecting the country's environment, particularly the Panama Canal Watershed. The next step, we suggest, is a formal design of a follow-on activity by the Mission. In that effort we hope that our recommended approaches will be a helpful starting point.

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## ATTACHMENTS

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Attachment 1	Bibliography .....	1-1
Attachment 2	List of Individuals Contacted.....	2-1
Attachment 3	The Relationship Between Poverty and Protected Areas .....	3-1
Attachment 4	Relationships Between Poverty and Protected Areas Within The Panama Canal Watersheet .....	4-1
Attachment 5	FIDECO Projects Completed 1996-2002 .....	5-1
Attachment 6	Survey of FIDECO Participants in Trinidad Agroforestry Project.....	6-1

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## ATTACHMENT 1

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## ATTACHMENT 2

### LIST OF INDIVIDUALS CONTACTED

Name	Organization	Position
Abel Gomez	Trinidad, Campana National Park Buffer Zone	Resident farmer
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Hector Maure	Chagres National Park	Director
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Roberto Ibañez	Smithsonian	monitoring
Rodrigo Coloagne	Banco Interamericano de Desarrollo	Especialista en Medio Ambiente
Rodrigo Tarté	Ciudad del Saber	Director, Área Académica (Former Director Fundación NATURA)
Rosa Montañez	ANCON	training ONGs
Ruben Reyes	Vista Hermosa, Penonomé	iguanas
Rubén Vega	ACP	GIS
Sergio D. Claure	USAID	Senior Water & Environmental Manager
Silvano Vergara	ACP	Environmental assessment
Stanley Heckadon Moreno	Smithsonian Tropical Research Institute	Asesor del Director, Transferencia Tecnológica y Política Ambiental
Zuleika Pinzon	Fundación Natura	Executive Director

## ATTACHMENT 3

### THE RELATIONSHIP BETWEEN POVERTY AND PROTECTED AREAS

*(Translated from the Spanish)*

An analysis was done of some of the most representative protected areas in the Republic of Panama using the average annual per capita income (IPAP)<sup>5</sup> figures from the 2002 Human Development Report for the municipalities or sub-districts in which the largest percentage of analyzed protected areas are located. In the case of Coiba National Park, the sub-districts are those found within the Park's area of responsibility. The average per capita annual income in the country is 2,377 Balboas.

It was found that the protected areas with the worst problems with illegal colonization, slash and burn agriculture and a lack of technical support were the sub-districts with the lowest per capita income. The worst cases were found in the four sub-districts of the Darien National Park where the average IPAP of 535 Balboas is well below the official poverty line of 905 Balboas. Similarly, in the Omar Torrijos National Park, the average per capita income of 434 Balboas is below the line for extreme poverty of 519 Balboas.

By contrast, the Metropolitan Nature Park and the Camino de Cruces National Park, located in the Ancon district with an IPAP of 6980 Balboas, have few problems with slash and burn agriculture and squatters. None the less, the problems of these parks could be considered more serious as they are threatened by urbanization and poorly directed governmental policies due to the high value of the land they occupy.

Protected Area	Province	District	Sub-district or Municipality	Average Annual Per Capita Income in Balboas in the Year 2000
La Amistad National Park	Bocas del Toro IPAP: B .1171	Changuinola	Guabito	841
		Changuinola	Changuinola (Cabecera)	1474
Isla Bastimentos National Marine Park	Bocas del Toro	Bocas del Toro	Bastimentos	704
Palo Seco Buffer Zone Forest	Bocas del Toro	Changuinola	Almirante	1114
		Changuinola	Changuinola (Cabecera)	1474
Omar Torrijos National Park	Coclé IPAP: B .1257	Chiriqui Grande	Chiriqui Grande (Cabecera)	1390
		Chiriqui Grande	Punta Róbalo	391
		La Pintada	El Harino	548
		La Pintada	Piedras Gordas	321

1. <sup>5</sup> IPAP is the Spanish acronym for "average annual per capita income."

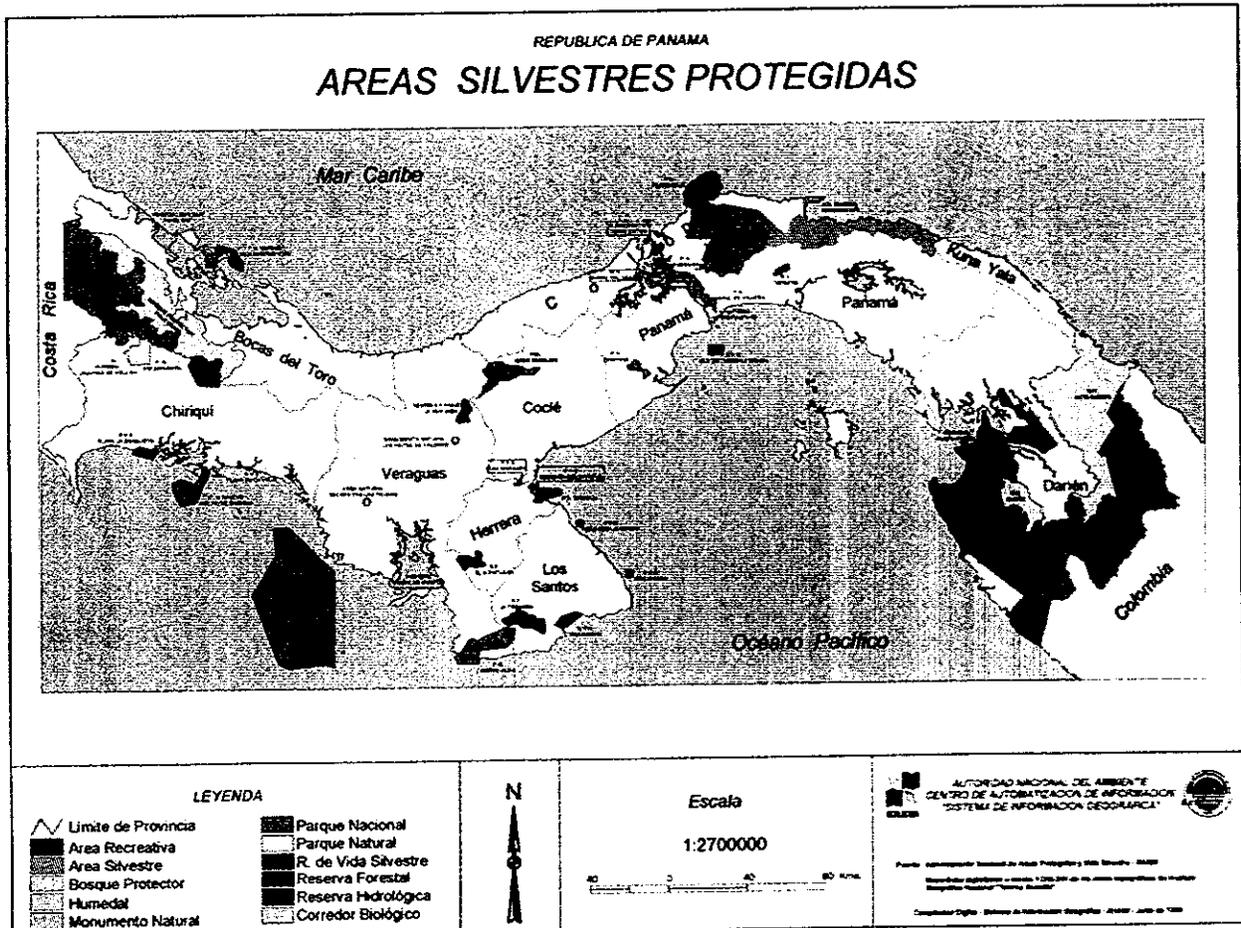
Protected Area	Province	District	Sub-district or Municipality	Average Annual Per Capita Income in Balboas in the Year 2000	
Portobelo National Park	Colón IPAP: B/.2151	Portobelo	Portobelo (Cabecera)	1600	
			Cacique	1591	
			Puerto Lindo	1575	
			Isla Grande	2240	
Soberania National Park	Colón IPAP: B/.2151	Colón	Cristobal	2781	
			Panamá IPAP: B/.2301	Ancón	6980
Camino de Cruces National Park	Panamá IPAP: B/.2301	Panamá	Ancón	6980	
Metropolitan Nature Park	Panamá IPAP: B/.2301	Panamá	Ancón	6980	
Campana National Park	Panamá IPAP: B/.2301	Capira	El Cacao	343	
			Lídice	1526	
			El Caimito	744	
			Chicá	1262	
Chagres National Park	Panamá IPAP: B/.2301	Panamá	Chilibre	1868	
			Colón IPAP: B/.2151	Sabanitas	2617
			Santa Isabel	Playa Chiquita	1789
Coiba National Park	Veraguas IPAP: B/. 1224	Las Palmas	Pixvae	585	
			Puerto Vidal	737	
			Bahía Honda	355	
			Río Grande	521	
Fortuna	Chiriquí IPAP: B/.1730	Gualaca	Hornito	1157	
Darien National Park	Darién IPAP: B/.615	Chepigana	Jaqué	595	
			Tucuti	487	
			Boca de Cupe	710	
			Paya	606	
			Yape	278	

Fuente: Informe Nacional de Desarrollo Humano, 2002.

4/5

# ATTACHMENT 4

## RELATIONSHIPS BETWEEN POVERTY AND PROTECTED AREAS WITHIN THE PANAMA CANAL WATERSHEET



## ATTACHMENT 5

### FIDECO PROJECTS COMPLETED 1995 - 2002

ORGANIZACIÓN	TÍTULO DEL PROYECTO	UBICACIÓN (Provincia)	MONTO APROBADO (U.S. \$)	CONTRA- PARTIDA (U.S. \$)	DURACIÓN
<b>Agroforestería y Manejo Sostenible de Bosques</b>					
<b>Aprobados en 1995</b>					
Asociación Nacional para la Conservación de la Naturaleza (ANCON)	Programa de Reforestación en el P.N. Soberanía: Sector Sureste	Panama	274,000.00	312,000.00	1995-2000
Sociedad Nacional para el Desarrollo de Empresas y Áreas Rurales (SONDEAR)	Recuperación de Áreas Degradadas del P.N. Altos de Campana	Panama	80,164.35	18,700.00	1995-2000
Asociación Nacional para la Conservación de la Naturaleza (ANCON)	Protección de las Cuencas Hidrográficas en la Región de Filo de Tallo	Darién	130,500.00	102,500.00	1995-1998
Fundación para la Promoción de la Mujer (FUNDAMUJER)	Creación de una Granja Comunitaria de Producción y Capacitación	Veraguas	80,106.96	164,544.00	1995-1997
Fundación Pro Niños del Darién (FUNPRODA)	Granja Agroecológica	Darién	235,750.00	164,550.00	1995-2001
Asociación Nacional para la Conservación de la Naturaleza (ANCON)	Centro Especializado de Capacitación Agroforestal y Silvopastoril	Coclé	149,500.00	80,500.00	1995-1998
<b>Aprobados en 1997</b>					
Asociación Coclesana de Productores de Café (ACOPROCAFE)	Desarrollo de un Sistema de Producción Agroforestal Utilizando Café en Asocio con Especies Maderables, Frutales y Leguminosas así como Reforestación de Especies Nativas en Varas Comunidades de los Corregimientos de Chiguiri Arriba, Pajonal y Toabré en el Distrito de Penonomé, Provincia de Coclé, Rep. de Panama	Coclé	70,000.00	72,716.00	1997-1999
Fundación de Educación Ambiental y Desarrollo Comunitario (FEADECO)	Proyecto Agroforestal y Educación Ambiental en Salamanca, Cuenca del Canal	Colon	65,564.62	66,015.38	1997-1999
Sociedad Unión Agrícola de Ciri Grande (SUACG)	Reforestación y Nueva Agricultura de Ciri Grande, Capira	Panama	51,047.20	14,420.00	1997-1999
TECHNOSERVE	Red Comunitaria de Granjas Agroforestales Sostenibles en la Cuenca Hidrográfica del Canal	Panama-Colon	108,349.00	108,340.00	1997-1999
CARITAS ARQUIDIOCESANA	Agricultura Sostenible y Reforestación Social en la Cuenca del Río Ciri Grande	Panama-Colon	36,799.65	3,600.00	1997-2000
Grupo de Ciencia y Tecnología para el Desarrollo (GRUCITED)	Reforestación Estratégica de Potreros en Fincas Ganaderas de San Lorenzo-Chiriquí	Chiriquí	58,915.00	22,850.00	1997-1999
Club de Mujeres de Negocios y Profesionales de Boquete (CMNYP)	Vivero Forestal y Frutal para el Desarrollo Sostenible del Río Caldera	Chiriquí	54,383.70	12,575.00	1997-2000
Pequeños Agricultores Unidos (PAU)	Recuperación Social y Económica de los Pobladores de Los Cerritos y sus Alrededores	Coclé	15,000.00	6,924.00	1997-1999
Universidad de Panama, Fac. de Ciencias Agropecuarias	Mediante Sistemas de Agroforestería Estudio Comparativo de la Producción de Zapallo Mediante el Sistema Convencional vs Agricultura Orgánica	Chiriquí	1,570.00	0.00	1997-1998
Grupo Ambientalista de Pajonal (GAMP)	Proyecto de Educación Ambiental y Desarrollo Sostenible de los Recursos Naturales en el Corregimiento de Pajonal	Coclé	12,991.45	20,226.00	1997-1999

<b>Aprobados en 1998</b>					
Fundación de Educación Ambiental y Desarrollo Comunitario (FEADECOC)	Proyecto Agroforestal de Gatuncillo	Colón	72,572.75	96,963.80	1998-2000
Asociación Coclesana de Productores de Café (ACOPROCAFE)	Agroforestería con Café Arbolado y Reforestación de Especies Nativas (ampliado)	Cocle	60,728.00	72,716.00	1998-2000
Programa de Ecología para el Manejo de Áreas Silvestres de Kuna Yala (AEK-PEMASKY)	Reforestación Económica con Plantas Nativas Utilizando Técnicas Agroforestales	Kuna Yala	70,000.00	125,233.60	1998-2000
Fundación para el Desarrollo Integral del Corregimiento de Cerro Punta (FUNDICCEP)	Restauración del Suelo y Control de la Erosión en la Zona de Amortiguamiento del Parque Internacional La Amistad y Parque Nacional Volcán Barú en el Corregimiento de Cerro Punta	Chiriquí	52,050.00	149,020.00	1998-2001
Grupo Ambientalista Guacamaya (GAG)	Proyecto de Reforestación y Capacitación en una Reserva Hídrica, Forestal, Arqueológica y de Vida Silvestre Cerro Guacamaya	Coclé	15,000.00	12,594.00	1998-2000
Hogar San José de Malambo	Proyecto de Reforestación y Desarrollo Agroforestal del Orfanato San José de Malambo, Cuenca Hidrográfica del Canal de Panamá	Panamá	61,166.00	76,600.00	1998-2000
<b>Aprobados en 1999</b>					
Fundación de Parques Nacionales y Medio Ambiente (Fundación P.A.N.A.M.A)	Renovación y Manejo Sostenible de Caretales del Corregimiento de Ciricito, Provincia de Colón	Colón	66,067.00	183,562.00	1999-2001
Asociación de Pequeños Productores "El Porvenir" (APEPPO)	Proyecto de Agroforestería y Desarrollo Sostenible	Coclé	18,030.85	7,100.00	1999-2001
Asistencia Legal Alternativa de Panamá (ALAP)	Recuperación Forestal y Manejo Agroecológico en la Micro Cuenca del Río Tapia, Comunidad de Altos de Pedregal, Fase Piloto	Panamá	33,413.00	34,083.00	1999-2001
Unión de Agricultores de los Torres (UNALTO)	Agroforestal y Manejo Sostenible en los Torres de Cabuya, Distrito de Antón	Coclé	15,000.00	29,540.00	1999-2001
Programa Rural de Acción Social y Desarrollo (PRASDE)	Cordillera Verde y Manejo Sostenible de las Fincas de Café de la Cuenca del Río "U", Corregimiento del Río Indio	Cocle	46,169.75	34,792.28	1999-2001
Grupo de Ciencia y Tecnología para el Desarrollo (GRUCITED)	Reforestación Estratégica de Potreros en Fincas Ganaderas de San Lorenzo y San Félix - Chiriquí	Chiriquí	69,280.00	33,350.00	1999-2002
Club Social y Conservacionista (SODECON)	Proyecto de Agroforestería y Educación Ambiental, en la Cuenca del Río La Villa,	Herrera	69,989.73	53,147.00	1999-2001
Centro de Investigación y Docencia de Panamá (CIDPA)	Arborización y Agricultura Ecológica en las Comunidades de El Peñón, Altos de las Nubes y Gonzalillo, en el Corregimiento de las Cumbres	Panamá	71,741.35	157,521.50	1999-2001
Asociación Nacional Técnica de Proyectos en Conservación del Ambiente (ANTEPCA)	Restauración de la Cobertura Boscosa en el P.N. Camino de Cruces	Panamá	50,000.00	67,395.00	1999-2001
Asociación de Producción Orgánica y Comercialización Solidaria de Panamá (PROCOSOL)	Sistemas de Fincas Agroforestales Solidarias SIFAS-PROCOSOL	Pma.-Coclé	61,512.00	78,602.20	1999-2001
Centro de Estudio y Acción Social Panameña (CEASPA)	Mejoramiento de las Condiciones Ambientales (Protección y Conservación de los Recursos Naturales y del Patrimonio Biológico) de la Zona de Amortiguamiento y de la Nueva Área Protegida de San Lorenzo y de las Condiciones de Vida de los Pobladores de la Zona de Amortiguamiento	Colón	69,948.97	101,439.50	1999-2001

Grupo de Reforestación Social de Sofre (GRSS)	Desarrollo Sostenible y Conservación de los Recursos Hídricos en 3 Comunidades	Coclé	15,000.00	23,260.00	1998-2000
Centro de Estudio y Acción Social Panameña (CEASPA)	Proyecto Piloto de Plantas Medicinales en los Bosques Tropicales de Panamá	Darien	69,213.00	75,742.00	1998-2000
Fundación de Organizaciones Campesinas e Indígenas de Veraguas (FOCIV)	Proyecto de Capacitación y Reforestación de Fuentes de Agua en 7 Comunidades Rurales de Veraguas	Veraguas	38,277.00	32,970.00	1998-2000
<b>Aprobados en 2000</b>					
Asociación de Productores de Cañaveral (APC)	Agroforestería y Manejo Sostenible La Nueva Esperanza	Veraguas	44,333.51	20,589.00	2000-2002
Asociación de Productores Renacer Campesino	Iniciativa Agroforestal en Bonga Arriba	Panama	24,967.00	23,618.00	2000-2002
Sociedad Unión Agrícola de Ciri Grande (SUACG)	Reforestación, Agroforestería y Conservación del Medio Ambiente en Ciri Grande, Capira	Panama	70,000.00	76,916.00	2000-2002
Asociación de Productores Agropecuarios para el Desarrollo Sostenible (APADES)	Agroforestería y Desarrollo Sostenible	Veraguas	21,695.00	8,241.25	2000-2002
Fundación para el Desarrollo de la Provincia de Veraguas (FUNDEPROVE)	Producción Agroforestal Sostenible, Utilizando Cítricos y Café (Naranjas) y Café, en Asocio con Leguminosas	Veraguas	70,000.00	38,844.00	2000-2002
Organización de Desarrollo Sostenible y la Exportación (DES-EX)	Proyecto de Agroforestería en la Comunidad de Monte Lirio, Utilizando Café en Asocio con Especies Nativas y Frutales en la Zona de Amortiguamiento del Parque Internacional La Amistad en la Provincia de Chiriquí	Chiriquí	70,000.00	43,224.00	2000-2002
Asociación Panameña para el Sostenimiento de la Agricultura y Recursos de la Naturaleza (APASAN)	Fomento y Difusión del Cultivo del Bambu-Guadua para Propósitos Múltiples	Panama	70,000.00	98,375.00	2000-2002
Grupo Orgánico de Agricultores Cerropunteños (GORACE)	Plantación de Árboles Frutales con Obras de Conservación de Suelos e Instalación de Infraestructura para la Producción de Vegetales con Prácticas Orgánicas	Chiriquí	30,000.00	30,967.00	2000-2002
Amigos de la Parque Internacional de La Amistad (AMIPILA)	Aplicación de Abonos Orgánicos: Una Alternativa de Restauración de Suelos y Mantenimiento de Ecosistemas	Chiriquí	44,725.49	33,895.00	2000-2002
Asociación Agroforestal de Pagua (AGROFOPA)	Proyecto Agroforestal de Pagua	Coclé	25,115.57	14,821.50	2000-2002
Asociación Nacional para la Conservación de la Naturaleza (ANCON)	Evaluación y Fiscalización de Sitios de Aprovechamiento Forestal en la Provincia de Darién y la Región Este de Panamá	Darien-Pma	92,858.50	96,626.00	2000-2001
<b>Aprobados en 2001</b>					
Asociación Agroforestal e Industrias de Veraguas (ASAFIVE)	Agroforestería y Manejo Sostenible de Cerro Largo y sus Áreas Adyacentes	Veraguas	29,952.00	29,919.00	2001-2002
ASAP-CRUBO	Propuesta para el Manejo y Desarrollo Humano Sostenible de la Comunidad de Charagre	Bocas del Toro	29,811.25	30,917.86	2001-2003
Movimiento Ecoturístico de Tierras Altas (METTA)	Proyecto Vivero Neotropical	Chiriquí	30,000.00	11,400.00	2001-2003
Grupo Agroambientalista Guayacanes (GRAAGUS)	Manejo de Bosques, Protección y Conservación de la Diversidad Biológica y Ecoturismo en Cerro Zueta	Coclé	30,000.00	10,670.00	2001-2003
Programa de Promoción y Desarrollo Social (PRODESO)	Proyecto de Capacitación, Protección de Fuentes de Agua, Reforestación y Agroforestería en 7 Comunidades de Cañas	Veraguas	69,236.00	84,722.00	2001-2003

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Instituto de Capacitación en Tecnología Rural Sostenible (INCATERUS)	Alianza Local para la Protección y Conservación de la Cuenca Baja del Río Santamaria	Veraguas	63,145.00	42,711.00	2001-2003
Asociación para el Desarrollo del Micro y Pequeño Productor (ADEMIPP)	Agroforestería y Capacitación para el Desarrollo Sostenible	Los Santos y Herrera	70,000.00	47,200.00	2001-2003
<b>Aprobados en 2002</b>					
Asentamiento Campesino Nuevo Progreso de Río Indio Nacimiento (ANP)	Desarrollo Agroforestal y Pastoral del Río Indio Arriba	Panamá	29,930.00	25,062.00	2002-2004
Asociación de la Mujer Rural del Guabo (AMRG)	Agroforestería de las Damas Rurales de el Guabo	Colón	22,320.00	12,500.00	2002-2004
Sociedad San Isidro Labrador (SSIL)	Desarrollo Agroforestal Sostenible en la Comunidad de la Onda Capira	Panamá	30,000.00	19,690.00	2000-2002
Asociación de Productores Agroforestales Amigos de la Naturaleza (APAAN)	Agroforestal de la Comunidad de Cerro Moreno	Coclé	30,000.00	18,625.00	2002-2005
Sociedad 20 DE ABRIL	Proyecto Agroforestal San Juan Bosco	Panamá	28,988.00	22,344.00	2002-2004
Asociación de Profesionales y Técnicos Ngobe de Bocas del Toro (APROTENGB)	Proyecto de Agroforestería Waire de Renacimiento	Bocas del Toro	24,800.00	32,084.00	2002-2004
Asociación de Agricultores de Sambú "Don Bosco" (AAGRISAM-DB)	Producción Agroforestal para el Desarrollo Sostenible en la Zona de Amortiguamiento de la Reserva Forestal de Chepigana y la Cuenca Hidrográfica del Río Sambú en Darién	Darién	70,000.00	32,400.00	2002-2004
<b>Manejo de Áreas Protegidas</b>					
<b>Aprobados en 1995</b>					
Instituto Smithsonian de Investigaciones Tropicales (STRI)	Un Centro de Visitantes en el Monumento Natural Barro Colorado	Panamá	51,700.00	54,000.00	1995-1996
Colegio de Ingenieros Agrónomos de Panamá (CINAP)	Identificación y Planificación del Manejo de Áreas Críticas con Potencialidades para la Creación de Áreas Silvestres Protegidas y la Ejecución de Proyectos de Reforestación con fines de Protección en la Cuenca Hidrográfica del Canal	Panamá	26,139.00	0.00	1995-1997
<b>Aprobado en 1997</b>					
Colegio de Biólogos de Panamá (COBIOPA)	Planificación y Desarrollo de la Propuesta Área Silvestre Protegida de Cerro Gaital en el Valle de Antón, Provincia de Coclé	Coclé	69,850.00	50,050.00	1997-1999
<b>Aprobado en 1998</b>					
Patronato Parque Natural Metropolitano (PNM)	Revisión y Actualización del Plan de Manejo y Desarrollo del Parque Natural Metropolitano	Panamá	70,000.00	81,765.00	1998-1999
<b>Aprobado en 2001</b>					
Patronato Parque Natural Metropolitano (PNM)	Centro de Capacitación en Técnicas de Educación Ambiental (Fase I)	Panamá	93,175.00	107,975.00	2001-2002
<b>Disminución o Prevención de la Contaminación</b>					
<b>Aprobados en 1995</b>					
Patronato Nacional de la Juventud Rural (PANAJURU)	Construcción de una Planta Productora de Biogás	Coclé	5,880.00	2,860.00	1995-1996
Asociación de Técnicos en Ingeniería Sanitaria (ATIES)	Caracterización de las Aguas del Río Juan Díaz e Inventario de sus Afluentes Contaminantes	Panamá	22,300.00	7,370.00	1995-1996

Aprobados en 1997					
Universidad Tecnológica de Panamá. Fac. Ingeniería de Sist. Comput.	Aplicación de Modelos Matemáticos para Pronosticar la Dispersión de Contaminantes en las Aguas del Río. Río Abajo	Panamá	1,650.00	0.00	1997-1998
Universidad Tecnológica de Panamá. Facultad de Ingeniería Civil	Transporte de Contaminación en el Ambiente, dentro del Relleno Sanitario de Cerro Patacón	Panamá	1,800.00	0.00	1997-1998
Universidad Autónoma de Chiriquí (UNACHI)	Generación de la Tecnología Apropriada para la Producción de Hongos Comestibles. Usando Desechos Agroindustriales como Sustrato	Chiriquí	35,400.00	2,200.00	1997-1998
Universidad Tecnológica de Panamá. Facultad de Ingeniería Civil	Planeación, Análisis y Diseño Preliminar de un Sitio de Disposición Sanitario para Desechos del Banano	Chiriquí	2,000.00	0.00	1997-1998
Fundación Universidad Autónoma de Chiriquí (Fundación UNACHI)	Programa de Investigación y Transferencia Tecnológica. Mediante Entrenamiento y Capacitación en las Técnicas del Cultivo de Hongos Comestibles y Colecta de Campo	Chiriquí	70,000.00	47,841.22	2001-2003
<b>Conservación de la Biodiversidad</b>					
Aprobados en 1995					
Círculo Herpetológico de Panamá (CHP)	Inventario de Anfibios y Reptiles: Fase Inicial para la Conservación de estas especies en el Parque Nacional Altos de Campaña	Panamá	19,954.50	15,100.00	1995-1996
Instituto Smithsonian de Investigaciones Tropicales (STR)	Cultivo de Árboles Nativos. Recolección, Germinación, Viabilidad de Semillas y Crecimiento de Plántulas de Especies Poco Conocidas Análisis del Sistema de Áreas Protegidas	Panamá	215,351.80	83,300.00	1995-2000
Sociedad Audubon de Panamá. Birdlife International (SAP)	para una Conservación Eficaz de su Biodiversidad	Rep. de Panamá	93,900.00	119,500.00	1996-1998
Aprobados en 1997					
Instituto Smithsonian de Investigaciones Tropicales (STR)	Prospección Química en el Bosque Lluvioso de Panamá	Panamá	69,680.00	150,000.00	1997-1999
Círculo Herpetológico de Panamá (CHP)	Publicación de Guía para los Anfibios del Monumento Natural Barro Colorado, P.N. Soberanía y Áreas Adyacentes	Panamá	22,000.00	20,000.00	1997-1999
Universidad de Panamá, Fac. de Ciencias Naturales	Control de la Plaga <i>Saccharum spontaneum</i> L. Mediante su Utilización en la Fabricación de Materiales de Construcción para Viviendas de Bajo Costo	Panamá	2,000.00	0.00	1997-1998
Universidad de Panamá en Veraguas, Fac. de Ciencias Naturales	Estudio de la letnotaua de Agua Dulce al Noreste de la Provincia de Veraguas, Panamá	Veraguas	1,998.80	0.00	1997-1999
Asociación Panameña para el Avance de la Ciencia (APANAC)	Restauración del Museo de Peces e Invertebrados Acuáticos	Panamá	14,200.00	14,500.00	1997-1999
Aprobados en 1999					
Asociación Panameña para el Avance de la Ciencia (APANAC)	Evaluación de la Biodiversidad Tropical Panameña como Fuente de Sustancias Antimicrobianas, Antimicóticas, Anticancer, Anti-SIDA, Antituberculosis, Insecticidas	Panamá	70,000.00	2,500.00	1999-2001

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Grupo de Consumidores de Productos Orgánicos de Panamá (VACURU)	Establecimiento de una Finca Orgánica en Cerro Punta y la Protección de Recursos Naturales	Chiriquí	15,500.00	133,350.00	1999-2001
Fundación para la Protección del Mar (PROMAR)	Arrecifes Coralinos de Bocas del Toro, Panamá: III. Distribución, Estructura (Diversidad Abundancia y Zonificación) y Estado Actual de Conservación de los Arrecifes de Isla Popa y Cayo Agua	Bocas del Toro	15,026.00	10,060.00	1999-1999
Fundación para la Protección del Mar (PROMAR)	Ecología Poblacional de Especies Comerciales de Pepinos de Mar (Echinodermata: Holothuroidea) del Caribe de Panamá	Bocas del Toro	56,320.00	31,360.00	1999-2001
Asociación de Criadores de Iguanas y Animales en Extinción (ASCIASE)	Reproducción, Conservación, Consumo y Venta a Futuros Criadores de Iguanas, Coclé	Coclé	45,018.21	64,625.00	1999-2001
<b>Aprobados en 2000</b>					
Asociación Nacional para la Conservación de la Naturaleza (ANCON)	Conservación y Manejo Integral de los Bosques de la Reserva Natural Punta Patiño, Provincia de Darién	Darién	81,611.62	87,850.00	2000-2001
<b>Aprobados en 2001</b>					
Asociación Ecológica Kuna (AEK-PEMASKY)	Distribución, Estructura y Estado de Conservación de los Arrecifes Coralinos de Kuna Yala (San Blas), Rep. de Panamá (AEK-PEMASKY)	Kuna Yala	83,677.00	105,977.00	2001-2002
Sociedad Audubon de Panamá (SAP)	Estudio Preliminar para la Protección de los Humedales de la Bahía de Panamá	Panamá	49,110.00	32,691.00	2001-2002
<b>Aprobados en 2002</b>					
Asociación Conservacionista CARIBARO (CARIBARO)	Conservación de las Tortugas Marinas, Reserva Municipal Playa Bluff, Bocas del Toro, Panamá (CARIBARO)	Bocas del Toro	23,000.00	15,780.00	2002-2003
Fundación para la Protección del Mar (PROMAR)	Creación y Manejo de un Sistema de Boyas de Amarre en los Arrecifes de Coral del Archipiélago de Bocas del Toro	Bocas del Toro	69,950.00	41,130.00	2002-2004

<b>Ecoturismo</b>					
<b>Aprobados en 1999</b>					
Asociación para la Promoción de Nuevas Alternativas de Desarrollo (APRONAD)	Proyecto Piloto: Planificación y Capacitación en Ecoturismo con Participación Comunitaria en las Comunidades de Santa Rosa y Guayabalito	Panamá	65,000.00	55,000.00	1999-2000
Fundación para el Desarrollo Sostenible de Panamá (FUNDESPA)	Ecoturismo con Participación Comunitaria en la Cuenca Hidrográfica del Canal	Panamá	70,000.00	15,000.00	1999-2001
<b>Aprobados en 2002</b>					
Asociación Agro-Ecoturística La Amistad (ASAELA)	Desarrollo Ecoturístico con Participación Comunitaria en el Parque Internacional La Amistad	Chiriquí	30,000.00	19,307.80	2002-2004
Fundación para la Protección del Mar (PROMAR)	Meri Ngobe: Ecoturismo en la Comunidad Indígena de Popa 2, Bocas del Toro	Bocas del Toro	17,977.00	37,952.00	2002-2003

52

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## ATTACHMENT 6

### SURVEY OF FIDECO PARTICIPANTS IN TRINIDAD

### AGROFORESTRY PROJECT

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#### **Augusta Bellido**

¿Qué hizo en el proyecto?

Finca de café con árboles maderables

¿Qué árboles o plantas sembró?

Café: 300 plantas. Naranja 20 p., Ronron 10 p.

¿Qué problemas tuvo?

Plagas y falta de recursos para atenderlo.

¿Qué beneficios recibió?

Herramientas y materiales que hacían un monto de B/.150.00 por incentivos de plántones.

¿Lo haría otra vez?

Me gustaría participar otra vez con este proyecto.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Apoyo económico de tipo social participativo.

¿Qué recomendaciones tiene para mejorar el proyecto?

Que continúen dándole ese apoyo técnico y económico.

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#### **Anebin Addiel Gil Bellido**

¿Qué hizo en el proyecto?

Una finca de café intercalado con árboles frutales y maderables la cual se trabajó en sistema de tresbolillo.

¿Qué árboles o plantas sembró?

Café: 1200 plantas. naranja 100 p., caoba nacional 30 p., cedro espino 20 p.

¿Qué problemas tuvo?

Plagas en las plantaciones y falta de recursos disponibles para administrarla de manera eficiente.

¿Qué beneficios recibió?

Un incentivo para la plantación por un monto de B/.150.00 en materiales y herramientas.

Seminarios de agroforestería lo cual me ha servido para colaborar con grupos comunitarios en mi comunidad y comunidades vecinas para el desarrollo de las mismas.

¿L o haría otra vez?

Si me gustaría participar otra vez por que este proyecto nos trajo beneficios a nuestra familia.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Necesitaria apoyo económico, técnico y social.

¿Qué recomendaciones tiene para mejorar el proyecto?

Que el grupo continúe; apoyo mutuamente: que el proyecto continúe dándonos ese apoyo.

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### **Dimis Martínez R**

¿Qué hizo en el proyecto?

Reforestación de maderables y frutales.

¿Qué árboles o plantas sembró?

Cedro espino 53p, Cedro amargo 51p, Ronron 13p, Cocobolo 13p, Caoba nacional 20p, Café 1300 p, 1 lb de pasto mejorado (Brachiaria).

¿Qué problemas tuvo?

Plagas en los maderables y frutales. Falta de recurso económico para el manejo de la plantación.

¿Qué beneficios recibió?

Los plántones de maderables y la semilla de café. La semilla de pasto mejorado, las herramientas, 1 pala coa, 1 pala, un rastrillo, 2 rollos de alambre de púas, 1 azadón, un martillo.

¿Lo haría otra vez?

Si, pero en mi propia finca de manera grupal rotando.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Financiamiento para el manejo de la plantación y mercado.

¿Qué recomendaciones tiene para mejorar el proyecto?

Que se haga la carretera lo más cercana posible a la finca para poder llegar hasta el mercado más cercano.

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### **Celedonio Ovalles Bellido**

¿Qué hizo en el proyecto?

Organizamos arborización de 16 productores en área de Trinidad Arriba. Realización de un pequeño vivero de plantas forestales y frutales con el grupo. Las mismas eran para ser distribuidas en las fincas de los productores y realizar pequeñas prácticas en los sistemas agroforestales.

¿Qué árboles o plantas sembró?

Café 1000 p, Cedro amargo, cedro espino, cocobolo, guabo, espavé, carbonero... en diferentes sistemas agroforestales.

¿Qué problemas tuvo?

Tuvimos algunos talleres prácticos pero hizo falta recursos económicos para manejo de las plantaciones y supervisión.

¿Qué beneficios recibió?

Herramientas e insumos. La capacitación técnicas fue de gran valor.

¿Lo haría otra vez?

Sí me gustaría seguir con este proyecto agroforestal.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Necesitaría recursos económicos o algún proyecto para ampliar y manejo de la plantación.

¿Qué recomendaciones tiene para mejorar el proyecto?

Organizarse mejor; recursos necesarios para mejorar las prácticas en las fincas ya iniciadas; mejoramiento a nivel de viveros y su equipo necesario a fin de implementar sistemas acordes a la realidad; reunión con todos los participantes y la comunidad; apoyo en caminos, visitas previas.

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### **Prudencio Rivera**

¿Qué hizo en el proyecto?

Cultivo de café con árboles.

¿Qué árboles o plantas sembró?

Café 100p, roble 25 p. caoba 25p., cedro 25 p.

¿Qué problemas tuvo?

El café se puso amarillo y muchos se han muerto.

¿Qué beneficios recibió?

Motivación, pollos, machete, semilla.

¿Lo haría otra vez?

Sí lo haría para mejorar mi finca y conservar la naturaleza.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Para ampliar el trabajo, ayuda en el combate de plagas, mejores caminos para sacar café o alimentos, que nos den semillas.

¿Qué recomendaciones tiene para mejorar el proyecto?

Que haya una persona en el área que nos ayude como seguir adelante.

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### **Luis Alvarado**

¿Qué hizo en el proyecto?

Cultivo y sembrado, mejoramiento de la finca.

¿Qué árboles o plantas sembró?

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Aguacate, mango, naranja 60, aguacate 10, mango 10, café 900p. cocobolo 30 p.

¿Qué problemas tuvo?

Cuesta mucho el cultivo por que uno solo no puede enfrentar los problemas de maleza, plaga y no hay dinero para un peón.

¿Qué beneficios recibió?

Herramientas agrícolas, bomba, pala, piqueta, arroz, semilla de ñame.

¿Lo haría otra vez?

Si lo haría otra vez, depende como venga el proyecto. Si el proyecto es igual si lo haría.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Fumigación para controlar la plaga y dinero para mi alimentación y así dedicar más cuidado a los cultivos o siembra.

¿Qué recomendaciones tiene para mejorar el proyecto?

Que haya acceso de camino en condiciones por que cuesta mucho la carga.

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**Eduardo Rodríguez**

¿Qué hizo en el proyecto?

Siembra de café y guabo con árboles maderables

¿Qué árboles o plantas sembró?

Cedro espino 50 p. cocobolo 50. caoba 50p.

¿Qué problemas tuvo?

Falta de dinero para controlar la maleza.

¿Qué beneficios recibió?

Insumos agrícolas, pala, coa, bomba, carretilla.

¿Lo haría otra vez?

Si lo haría otra vez.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Más insumos agrícolas para controlar plagas, dinero para peones.

¿Qué recomendaciones tiene para mejorar el proyecto?

Que por parte del los Estados Unidos que financien otro proyecto y así logramos agrandar lo hecho.

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**Sanjuan Segundo**

¿Qué hizo en el proyecto?

Sembrar café con árboles frutales.

¿Qué árboles o plantas sembró?

Café 300 p., naranja 100 p.

¿Qué problemas tuvo?

Falta de recurso para controlar la maleza, suelo muy malo.

¿Qué beneficios recibió?

Una pala, 200 pies de manguera, una lima, un machete.

¿Lo haría otra vez?

Si lo haría para mejorar la calidad de vida y tratar de aprender a cultivar mejor.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

No respondió.

¿Qué recomendaciones tiene para mejorar el proyecto?

No respondió.

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### **Elicer Rodríguez**

¿Qué hizo en el proyecto?

Sembré árboles frutales.

¿Qué árboles o plantas sembró?

Caoba 100p., Café 800 p.

¿Qué problemas tuvo?

Mucha plaga y no tenía recursos para controlar las enfermedades del suelo.

¿Qué beneficios recibió?

50 pollos, 6 quintales de alimento vitaminado, pala coa, pala, machete.

¿Lo haría otra vez?

Si lo haría por que son buenos y ayudan a conservar la naturaleza.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

No respondió.

¿Qué recomendaciones tiene para mejorar el proyecto?

No respondió.

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### **Nidia Bellide**

¿Qué hizo en el proyecto?

Cultivo de maderables y café.

¿Qué árboles o plantas sembró?

Maderables y frutales, cedro espino 25p, caoba 25p, maría 25p, cedro 50, café 200 p.

¿Qué problemas tuvo?

Sequía, plagas y maleza.

¿Qué beneficios recibió?

Seminarios, adiestramiento de cómo conservar el suelo y herramientas agrícolas. Pala, coa, machete.

¿Lo haría otra vez?

Si lo haría por que nos da orientación para trabajar la tierra y nos ayuda a enfrentar la pobreza.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Que haya una persona encargada de darnos asesoría y nos ayude a combatir las plagas. Más semillas.

¿Qué recomendaciones tiene para mejorar el proyecto?

Que haya una fuente de empleo en el área para sufragar los alimentos y así tener dinero para controlar la maleza y un buen camino.

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### **Orlando Ovalle**

¿Qué hizo en el proyecto?

Café 400 p., maderables en los linderos.

¿Qué árboles o plantas sembró?

Árboles de maría, cedro espino.

¿Qué problemas tuvo?

Ninguno de plagas pero si en el aspecto económico que no pude sembrar lo que yo desearía. Combate de maleza.

¿Qué beneficios recibió?

Me enseñaron a cultivar la tierra en una forma moderada. Me dieron coa, pala coa, bomba, rastrillo, machete.

¿Lo haría otra vez?

Yo si lo volvería a hacer por que fue el único apoyo que recibimos los campesinos.

¿Qué apoyo necesitaría para ampliar el trabajo hecho?

Que haya una persona que nos anime para seguir adelante. Semillas.

¿Qué recomendaciones tiene para mejorar el proyecto?

Que nos ayuden, que nos visiten.