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PROJECT ASSISTANCE COMPLETION
REPORT

PACIFIC ISLANDS
MARINE RESOURCES PROJECT
(PIMAR)

(AID PROJECT NO. 879-0020)

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TABLE OF CONTENTS

	Page
Contents	i
Acronyms	ii
I. DESCRIPTION OF THE PROJECT	1
A. Background	1
B. Project Purpose and Description	2
C. Implementation Arrangement	4
II. CURRENT STATUS OF THE PROJECT	5
A. Physical	5
B. Financial	9
III. SUMMARY OF CONTRIBUTIONS	9
A. Planned Inputs	9
B. Actual Inputs	10
C. Host-Country Contributions	10
IV. PROJECT ACCOMPLISHMENTS	11
A. Planned and Actual Outputs	11
B. Summary Impacts	31
C. Assessment	40
V. FINAL AND POST-PROJECT RESPONSIBILITIES	42
VI. REVIEW OF PROJECT EVALUATIONS	42
VII. LESSONS LEARNED/RECOMMENDATIONS	43
VIII. ANNEXES	47
A. List of Participating Countries/Organizations	47
B. List of Contractors and Pre-Approved Contracts	48
C. List of Completed Sub-projects	49

ACRONYMS

ADB	Asia Development Bank
ADO	Agricultural Development Officer
ARP	Atoll Research Programme
CA	Cooperative Agreement
COP	Chief of Party
CPUE	Catch Per Unit Effort
DCA	Douglas Clark Associates, Inc.
DFA	Deepsea Fishermen Association
DFMR	Department of Fisheries & Marine Resources
DWFN	Distant Water Fishing Nations
ENB	East New Britain
EEZ	Exclusive Economic Zone
FAD	Fish Aggregation Device
FFA	Forum Fisheries Agency
FIA	Fishing Industry Association
FSM	Federated States of Micronesia
FSP	Foundation of the Peoples of the South Pacific
GOCI	Government of Cook Islands
GOF	Government of Fiji
GOK	Government of Kiribati
GOT	Government of Tuvalu
LL	Longlining
LOP	Life of Project
MAP	Management Action Plan
MMR	Ministry of Marine Resources
MOC	Memorandum of Cooperation
NFA	National Fisheries Authority
NMFS	National Marine Fisheries Service
PACR	Project Assistance Completion Report
PACD	Project Assistance Completion Date
PCC	Project Coordination Committee
PIMAR	Pacific Islands Marine Resources
PNG	Papua New Guinea
PP	Project Paper
ProAg	Project Agreement
PSC	Personal Services Contractor
PVO	Private Voluntary Organization
RDA	RDA International, Inc.
RDSS	Regional Development Strategy Statement
RIC	Regional Impact Component
SPC	South Pacific Commission
SPREP	South Pacific Regional Environment Programme
TBAP	Tuna and Billfish Assessment Programme
USP	University of the South Pacific

PACIFIC ISLANDS MARINE RESOURCES PROJECT

I. DESCRIPTION OF THE PROJECT

A. Background

During the mid-eighties, marine resources development became a central priority to the Pacific islands nations in their pursuit of greater economic gains. Accordingly, Pacific island nations gave priority to the development of their marine resources, specifically the small-scale fisheries, based on the following common strategic elements:

- * Encouraging the development of small-scale commercial fishing to move beyond the reef to utilize the under-utilized deep-water resources, while preserving the inshore resources for subsistence purposes;
- * Protecting the coastal marine resources environment from damages due to land-based activities; and
- * establishing research-based marine resources management plans to protect both the inshore and offshore resources and ensure economic viability of newly established fisheries.

The approved South Pacific Regional Development Strategy Statement (RDSS) and Management Action Plan also has as its goal increasing income opportunities from the development of natural resources. A marine resources program formed a central part of A.I.D.'s strategy to pursue that goal. The strategy called for new mechanisms of assistance delivery and new approaches to program development.

The Pacific Islands Marine Resources (PIMAR) project (879-0020) was subsequently designed in the summer of 1989 and authorized on July 13, 1990, and incorporated the approaches called for under the RDSS in its design and to emphasize the private sector development, natural resources management and sustainability as key strategies. The project was originally designed with components in only five selected Pacific countries, involving specific marine resources activities selected not only to meet the national needs for marine resources development, but also to determine their potential replication in other regional countries. The five components included: Cook Islands black pearl, Kiribati atoll lagoon management, Papua New Guinea (PNG) small-scale fisheries development, Tonga small-scale longline fisheries development, and Tuvalu bottomfish fisheries development. PIMAR also has a Regional Impact Component (RIC) to disseminate project results to other Pacific Island countries and to give support of SPC's Tuna and Billfish Assessment Programme (TBAP).

In September 1991, AID/Washington approved the Project Paper supplement 1, which added a sixth country component in Fiji (Fiji Lami Jetty extension) of \$900,000 (ESF-funded while all other components were DA-funded) and \$300,000 of funds for continuing support of SPC's TBAP (as part of the Regional component).

B. Project Goal, Purpose and Description

As stated in the Project Paper (PP), and in all the bilateral agreements with the countries, the goal of PIMAR, at that time, was to increase income generating opportunities for the communities within the Pacific islands through means which enhance the conservation and management of natural resources, specifically the marine resources. In later years, this goal was expanded to include increasing exports of high value marine products, from the commercial exploitation of marine resources.

The purpose of the project is to develop, demonstrate and make available for replication innovative technologies and strategies which increase the benefits to Pacific islands communities from sustainable, small-scale, private sector uses of marine resources.

At the national level, the project aim was to respond to selected opportunities in six countries:

- * establishing a pearl industry in the Cook Islands;
- * assisting the commercial fishing activities of the private fishing sector in Fiji;
- * researching improved marine resource management strategies in Kiribati;
- * establishing small-scale tuna longlining and assisting the Fishing Industry Association (FIA) in Papua New Guinea (PNG);
- * testing methods to establish a small-scale tuna longlining in Tonga; and
- * surveying bottomfish resources and establishing small-scale bottomfishing in Tuvalu.

At the regional level, the project tested and provided successful strategies and technologies which would be replicable throughout the region for:

- * establishing a black pearl culture industry;
- * the systematic formulation of a lagoon management plan, indicating the impacts of high population density and land-

based activities on the lagoon resources;

- * developing a viable small-scale tuna fishery providing employment and incomes;
- * the sustainable development of the deep bottomfish fishery, and
- * supporting the development of the offshore tuna resources.

The PIMAR project supported six bilateral and one regional component, namely:

1. In the **Cook Islands**, the project provided long-term technical assistance in pearl oyster culture and resources management and short-term technical assistance for pearl oyster seeding, and market studies. The project also financed a fully equipped black pearl research and training center at Penrhyn island, which included a laboratory and office, an hatchery, fuel storage, an hybrid power house and three living quarters.
2. In **Kiribati**, the project provided a program of short-term technical assistance to assess the lagoon stocks and devised resources management programs, monitored and assessed the impacts of land-based development activities on the Tarawa lagoon ecosystem.
3. In **Fiji**, the project provided a berthing facility at Lami, Suva to support the commercial fishing activities of the private fishing sector.
4. In **Papua New Guinea (PNG)**, the project funded a pilot small-scale tuna longlining activity at East New Britain, and provided support to strengthen the Fishing Industry Association (FIA) based in Port Moresby.
5. In **Tonga**, the project provided long-term and short-term technical assistance (fishing technology and fish marketing) to test the feasibility of new small-scale tuna fishing methods, as well as the viability of a local baitfish fishery for tuna fishing. The project was located in Vava'u.
6. In **Tuvalu**, the project supported long-term and short-term technical assistance to assess offshore bottomfish resources, and to carry out an exploratory program involving experimental, and commercial fishing as well as export marketing trials. The project also provided short-term training for Tuvalu fishermen and technicians and also long-term training for Tuvalu trainees.

7. A seventh component, the **Regional Impact Component (RIC)**, was specifically intended to support workshops, short-term technical assistance, training and study tours, and publications to disseminate the results of the PIMAR bilateral activities to other regional countries, including the regional institutions and organizations. Assistance for the SPC-TBAP was also continued as part of the regional component.

C. Implementation Arrangement

Funding Arrangement:

Funding for the six components of PIMAR was obligated through bilateral agreements with each government. Funding for USAID/RDO/SP project management function was obligated through contracts with two PSCs, and funding for the regional component was provided through a grant with the selected regional organization.

Implementation Arrangement:

Several aspects of the PP implementation plan have had to be changed substantially from the original design to reflect the reality and changing circumstances: (a) It was not feasible to have the Cook Islands, Tonga and Tuvalu components in one contract; (b) the contract for Kiribati was awarded to a private U.S. firm through open competition instead of going to a university under a Cooperative Agreement; and (c) only one of the two phases under the PNG component was implemented by a PVO (FSP-PNG) through a Cooperative Agreement.

The PIMAR components were finally implemented through the following mechanisms:

1. Memorandum of Cooperations (MOC) with each government/Cooperative Agreement (CA) with U.S. Private Voluntary Organization (PVO): Fiji and Papua New Guinea (phase 2);
2. Contracts with U.S. Contractors: Cook Islands, Kiribati, Tonga, Tuvalu. The contractors were selected by technical panels representing A.I.D. and host country representatives.
3. Grant agreement with the South Pacific Commission (SPC) for phase 1 of the PNG component.

Project Management:

The project was managed by a management unit with USAID/RDO/SP in Suva, specifically the Agricultural

Development Officer (ADO) as project manager supported by two professional fishery advisors recruited as personal services contractors (PSCs), who shared responsibilities for the PIMAR components.

Technical Assistance Responsibilities:

Four of the country components (Cook Islands, Kiribati, Tonga and Tuvalu) were implemented by U.S. contractors, selected through competitive bids by technical panels. The contractors were responsible for all technical assistance provided under each component. The contractors reported to USAID/RDO/SP and also to their respective home offices. The components in Fiji and PNG were executed by the U.S. PVOs: Foundation for the Peoples of the South Pacific, Fiji (FSP, Fiji), and FSP, PNG respectively.

Training:

Long-term training and selected short-term participants training (study tours) were coordinated by the RDO/SP Training Advisor in consultation with the two PSCs at RDO/SP and the training officers in the countries concerned. The short-term training provided under each component were the responsibility of the contractors, and such training were part of the respective annual training plans prepared by the contractors.

II. CURRENT STATUS OF THE PROJECT

A. Physical

The performance period for the PIMAR project was from July 13, 1990 to September 30, 1995. The startup of implementation (contract signed) however, was a little slow due to (1) RDO/SP's handling four competitive contracting actions at the same time; (2) two protests to GAO, one of which delayed contracting by about three months and both required weeks of staff time to prepare responses (one protest was withdrawn and the other disallowed); and (3) inexperience of RDO/SP staff with competitive contracting.

During the implementation period, the PIMAR components have to be modified and adjustments made to the respective budgets to reflect either adding new inputs or eliminating the planned inputs to reflect the real circumstances at the particular time.

Cook Islands: The Project Agreement (ProAg) was amended on August 8, 1993 to make numerous adjustments in the project description and budget due to the change in the project location (moved from the uninhabited island of Suwarrow to Penrhyn atoll with about 500 people) and numerous adjustments to inputs. The

costs increased substantially due to higher material costs, delay in startup, and the original budget being greatly underestimated. The project tasks, including the construction work on the Tongareva Marine Research Center (TMRC) included in the contractor's work schedule were completed in August 1995. The TMRC was finally opened and handed over to the Government of the Cook Islands (GOCI) on August 23, 1995. The contractor, RDA International, Inc., completed its contractual tasks on August 31, 1995.

Papua New Guinea: A number of events and actions occurred that delayed the redesign and implementation of the PIMAR PNG component. These included: (1) A change of the geographic area from Madang, Morobe, and East New Britain to New Britain (East and West), and New Ireland, at the request of the PNG government in 1990; (2) The postponement of the redesign process pending the results of the Asia Development Bank (ADB) fisheries sector studies in PNG; (3) Complicated and heavy workloads related to the implementation of the other PIMAR components in 1991; (4) A change in A.I.D.'s strategic development focus as detailed in the "South Pacific Regional Strategy Update FY 1991-FY 1994 RDSS" in late 1991; and (5) Design work not begun as anticipated in early 1992 due to key members of the design team being unavailable until July 1992. Despite these delays, the new PNG project was finally designed and successfully implemented by SPC (phase 1) and FSP and FIA (phase 2). The field work for the pilot tuna longlining activity ended in 1994 and the work schedule for phase two was completed on June 30, 1995.

Kiribati: The ProAg was amended on August 13, 1993 to add two new tasks which increased public participation and the replicability potential and to increase the LOP budget. The contractor completed its field work at the end of July, 1994 and ended its contract on December 31, 1995. The completion of the final reports, including the video were overly delayed due to the shortage in contract funding. The final report was however, finally received in June, 1995 and copies distributed to the GOK USP, SPC, and FFA in mid-July, 1995. The completion of the video was delayed pending the resolution of the problems between BioSystem and the sub-contractor, DCA. DCA had offered to provide the video direct to USAID, but by early September 1995, there was still no word from either BioSystem or DCA about the final video. USAID/Manila contacted DCA directly in an effort to obtain the final video. BioSystems was reported to owe funds to DCA. Without receipt of the outstanding payment, DCA was unable to complete the video.

Tonga: The ProAg was amended on July 13, 1993 to add a marketing task, make minor adjustments in planned inputs and to revise the budget. The contractor successfully completed its contract work schedule in August 1995, and completed the final report in December 1994.

Tuvalu: The ProAg was amended on June 24, 1993 to add a marketing task, make minor adjustments in planned inputs and to revise the budget. The original budget was unrealistically low. Progress has been slow due to the difficulties the GOT has had with providing a fishing vessel. Despite these problems, the contractor successfully completed its field work in September 1994, and completed all the required technical reports, including the final report in January 1995.

Fiji: Implementation has been slow due to (a) a year's delay in signing a Memorandum of Cooperation (MOC) with the GOF, and (b) another year's delay in the GOF's signing a lease agreement for use of the jetty facilities and land. Further delays in late 1993 related to the re-bids from the two American firms (for the floating jetty) caused the delays in the completion of the jetty and associated facilities. Despite the technical and engineering designs problems, the work schedules for the U.S. contractor as well as the Fiji local sub-contractors (for the onshore facilities) were finally completed in October 1994. The jetty was finally handed over to the GOF on October 21, 1995.

Regional Impact Component: As the purpose of the subproject was to disseminate the successful technologies and practices developed under PIMAR throughout the region, the project design and also its implementation was planned for late during the life of the PIMAR project. However, due to the closure of the RDO/SP office, and the subsequent decision by AID/Washington to terminate the activity by September 30, 1994, the funding requested for FY1994 to complete the project activities was disapproved by AID/Washington, and the project was finally and prematurely terminated on September 30, 1994, prior to the completion of the planned activities.

SPC TBAP: As TBAP has been a long-term USAID commitment, which enabled the SPC to carry out highly critical stock assessment research, which benefit tuna fishing in the region by domestic fleets as well as the Distant Water Fishing Nations (DWFNs), including the U.S. industry, its early termination on September 30, 1994 was met with negative reaction.

RDO/SP Office Closures: Following the decision by AID/Washington to close the RDO/SP office in Suva, Fiji on September 30, 1994, more changes occurred to the implementation schedules for the PIMAR subprojects:

* The PACDs for the bilateral projects in Fiji, Kiribati, and the SPC regional impact component were terminated on September 30, 1994;

* The PACDs for the bilateral projects in Tonga and Tuvalu were terminated on December 31, 1994 and January 31, 1995 respectively; the extended time after the RDO/SP office closure date was provided to give the contractors more time

for the completion of the technical and final reports;

- * The long-term training components for the Tonga and Tuvalu projects were also extended to December 31, 1994 and June 30, 1995 respectively;

- * The PACDs for bilateral projects in Papua New Guinea and the Cook Islands were extended to June 30, 1995 and September 30, 1995 respectively.

With the actual closure of the RDO/SP office on September 9, 1994, the management of the project was shifted to USAID/Philippines based in Manila. The Manila office provided a project team, which supported the continuing South Pacific programs including the PIMAR project. The Fisheries Advisor, based in Suva, continued to oversee the projects field work and all project related matters in the extended bilateral projects in PNG and the Cook Islands, as well as the reporting tasks under the completed PIMAR components.

The details of the subproject achievements have been reported in separate technical, quarterly progress and final reports prepared by the respective contractors, regional organization and PVOs, namely:

- * RDA International, Inc. for the Cook Islands, Tonga and Tuvalu projects;
- * BioSystems Analysis, Inc. for the Kiribati project;
- * FSP for the Fiji project;
- * FSP-PNG for the PNG project; and
- * SPC for the Regional Impact Component, and TBAP.

B. Financial

The PIMAR Project was incrementally funded with an initial LOP budget of \$12.5 million, which was subsequently increased during fiscal year 1991 to \$13.7 million.

The PIMAR funds were originally earmarked as follows:

<u>Components</u>	<u>Planned Budgets (\$000)</u>	<u>Amended Budgets (\$000)</u>
Cook Islands	2398	3400
Fiji	-	900 **
Kiribati	972	1620
PNG	3092	700
Tonga	2337	2420
Tuvalu	683	1070
Regional Impact	800	804 *
Sub-Total	<u>10282</u>	<u>10914</u>
Others		
Coordination	582	1117
Evaluation and Audit	250	250
Sub-Total	<u>11114</u>	<u>12281</u>
Contingency	556	1419
Inflation	830	-
Total	<u>12,500</u>	<u>13700</u>

Notes: * Includes the \$300,000 for the SPC TBAP
** the additional ESF funding for Fiji

With the availability of ESF funds (\$300,000) in Fiscal Year 1991 for Fiji, a project was designed for \$300,000 in each of the three years for a total of \$900,000. Also, during FY1991, \$300,000 PD&S funds was made available to continue USAID support for the SPC Tuna and Billfish Assessment Program (TBAP) as part of the regional component. Both these activities were incorporated as PIMAR components and the additional funds subsequently increased the PIMAR LOP budget from \$12.5 million to \$13.7 million (see column 2 above).

III. SUMMARY OF CONTRIBUTIONS

A. Planned Inputs

The PIMAR project was authorized on July 13, 1990, and involved initially five bilateral and one regional planned obligations up to \$12,500,000 in grant funds over a five year period from date of authorization up to September 30, 1995. The

above authorization was however amended on September 20, 1991 (Project authorization Amendment No. 1), through a PP Supplement, which added a sixth country component in Fiji to PIMAR, and also included the Tuna and Billfish Assessment Programme (TBAP) within the regional component. The amendment also increased the planned obligations over a five year period to \$13,700,000.

B. Actual Inputs

During the implementation period, amendments were also made to the budgets for the individual bilateral components. The budgets for some components were increased to take account of the modifications and additional inputs needed to achieve the respective project objectives (see column 2, Section II.B. above).

During Fiscal Year 1994, AID/W made a decision to close the RDO/SP offices in Suva, Fiji and in Port Moresby, PNG in September 1994. The early closure of the RDO/SP office subsequently resulted in the shortfall in the PIMAR funding from the authorized amount of \$13.7 million to \$10.8 million, and the subsequent reduction in the budgets for some of the PIMAR components:

Final ProAgs and Contracts/Grants Budgets:

<u>Components</u>	<u>Actual ProAgs Budgets</u> <u>(USD)</u>	<u>Contracts/Grants</u> <u>(USD)</u>
Cook Islands	3,286,495 (Increase)	3,274,579
Fiji	600 (Decrease)	600,000
PNG	440 (Decrease)	175,000 (SPC) 240,000 (FSP)
Kiribati	1,618,455 (Increase)	1,611,700
Tonga	2,420,000 (Increase)	2,386,500
Tuvalu	1,070,000 (Increase)	1,017,000
SPC-RIC	99,779 (Decrease)	99,779
SPC-TBAP	300,000	300,000

C. Host-Country Contributions

The contributions by the host governments and the PVOs were "in-kind". However, these contributions were monitored closely throughout the life of the respective projects, and for each project budget increase proposal, the contributions were computed and assessed to ensure the 25% host country contribution requirement was satisfied before approving the increased budgets and the amendments to the agreements. Despite the early closure of the PIMAR components, it is pleasing to note that for all the PIMAR components, all the recipient countries provided substantial contributions which resulted in the successful achievement of the objectives of the respective PIMAR projects.

IV. PROJECT ACCOMPLISHMENTS

A. Planned and Actual Outputs

No single summary arrangement can do justice to the many accomplishments of the PIMAR components. Whilst the individual quarterly, technical and final reports submitted by the contractors or Grantees provided "laundry lists" and the details of the subprojects' achievements, this section presents the subprojects highlights separately. The matrix at the end of this section provides a summary of the expected outputs and the actual accomplishments for all the PIMAR activities.

1. Cook Islands Oyster Project:

The primary objective of this subproject was to assist in the establishment of a pearl culture industry in the northern Cook Islands using sound management practices to prevent detrimental environmental effects.

The research program included environmental monitoring and collection of basic biological, hydrological and physio-chemical data from the Penrhyn lagoon, and was aimed at providing critical data necessary for the development of farming and management schemes as well as monitoring environmental impacts of farming and associated human activities. The research was carried out in two phases: (1) Collection of baseline data before farming activities began; and (2) Continuation of monitoring and data collection as the farming industry is being developed.

PIMAR Cook Islands focussed on achieving the following outputs:

- * Establishing a marine research station at Penrhyn (Tongareva); (originally, the station was planned for Suwarrow island);
- * Testing and evaluating the suitability of pearl farming in the three northern islands of the Cooks;
- * The adoption of pearl farming methods by pearl farmers, and the implementation of a Lagoon Management Plan for the northern islands;
- * Training the private sector in pearl farming techniques;
- * Training the MMR extension agents in lagoon management for pearl farming and in science, and

marketing skills to manage the resources used in pearl farming; and

- * Making available to other Pacific Islands with pearl farming potential, information on the dimensions of sustainable pearl farming.

The PIMAR Cook Islands project team (RDA staff and counterparts) was mobilized to Tongareva in December 1992. Despite the delays in the implementation of the project, due to (1) the change in project site from Suwarrow to Penrhyn (Tongareva), (2) delays in making available a site in Penrhyn for the project, (3) delays in the transport of materials from the U.S. to the Cooks, and (4) the impacts of the closure of the RDO/SP office in Suva: the reduction in project funding, and life of project, PIMAR Cooks accomplished, by the end of the project, the following outputs:

- * The Tongareva Marine Research Center (TMRC) was finally established and became operational during mid-1995;
- * Developed and established a lagoon water quality monitoring program. Conducted and completed phase 1 of the research program in November 1993, and phase 2 in August 1995;
- * Established a spat collecting program to monitor the impacts of farming and other activities on the population of the wild stock in the lagoon;
- * Developed and established an hatchery, providing an alternative method for producing oyster spats for farming; developed and established a training program for MMR staff in hatchery operations; and achieved three successful spawning trials;
- * Established an office and water laboratory, including a training program for the MMR laboratory staff;
- * Engaged the farmers in extension and training activities (pearl seeding and husbandry techniques); and
- * Established a bi-monthly farm monitoring research program to provide extension assistance to the farmers.

A few random statistics as indicators of the project achievements, all of which exceeded the subproject's original expectations:

- * 7 MMR staff trained in lagoon research work and spat collection techniques;

- * 1-2 spats/30 cm collector achieved;
- * Conducted one in-country extension training workshop for farmers;
- * 40 private farms established in Penrhyn lagoon.
- * The hatchery achieved 3 successful spawning trials.

2. Fiji Lami Jetty Project:

The purpose of the Fiji component was to improve profitability and productivity of the private fishing sector. To achieve the purpose, the planned activities included:

- * Extension of the Lami Jetty facility and support facilities (managed by the Deepsea Fishermen Association) to alleviate the congestion and increase efficiency of in-port operations for small and medium-scale commercial vessels;
- * Introduction of local suppliers to U.S. manufacturers and exporters to make available to the private sector fishermen competitively priced and appropriate fishing gear;
- * Linking of local fish middlemen with U.S. fish importers in order to expand fish exports to the U.S.; and
- * Provision of assistance with privatization and policy reform opportunities within the Fiji Government to create a business environment conducive to private sector fisheries development.

Due to the early closure of the RDO/SP office, as discussed earlier, and the reduction in the subproject planned budget from \$900,000 to \$600,000, all the above planned inputs (short-term technical assistance, study tours and trade promotion), except the infrastructure construction were terminated. Accordingly, it was only possible to achieve the first of the following three planned project outputs, namely:

- * Expansion of existing Lami Jetty and auxiliary facilities under private sector management;
- * Establishment of market linkages by local gear suppliers to U.S. gear manufacturers and of local fish exporters to U.S. fish importers; and
- * Review and adoption of privatization and policy reform opportunities.

Despite the above impact of the closure of the RDO/SP mission and the subsequent budget reduction, and despite the series of delays in the completion of the construction work on the jetty and associated facilities (as reported in the project final reports prepared by RDO/SP and FSP, Fiji), the Lami Jetty was finally completed and handed over to the Government of Fiji on October 21, 1994, thus achieving the construction project output. Fiji now has an operational and self-contained jetty facility that has the potential to be the most efficient one in the country, and providing benefits to the commercial fishing sector. Commercial fishing boats can now unload, and take on supplies (fuel, water, ice, etc) and make minor repairs at the new facility.

3. Kiribati Atoll Marine Resources and Environmental Management Project:

The objective of the subproject was to undertake applied atoll research leading to the formulation of management strategies for the marine resources of the Tarawa lagoon. Regionally, the lagoon management study was seen as a prototype for other atolls with similar pollution and over-population problems.

The original planned research program was initiated in late 1991, and focussed mainly on the shellfish and finfish stock assessments, surveys of traditional use patterns, lagoon water quality and circulation data collection, and the formulation of a management strategy. In 1993, a major component was added to allow for public participation through workshops and also the making of documentary videos, with the aim to facilitate the public awareness of the lagoon management issues, and to create economic incentives for the private sector implementation of the management plan.

Despite the early closure of the project (field work in September 1994, and the reports in December 1994), the project activities were successfully completed in August 1994. The project successfully achieved all its planned outputs at the end of its planned life:

- * Completed stock assessments for shellfish and finfish, including their biology and habitat requirements, including surveys of traditional use patterns to support these resources assessment studies;
- * Successfully established the impacts of land-based activities (causeways, sewage disposal) on the marine resources yields, and the overall lagoon ecosystem;

- * Formulated and developed a Management Plan for the Tarawa lagoon; and
- * Successfully increased public awareness of the need to manage the Tarawa lagoon in accordance with the established scientific guidelines as determined during the project.

Some statistics to show the project achievements:

- * Held two scoping meetings to discuss the scope of the project;
- * Held 4 PCC meetings to discuss the progress and achievements of the activities;
- * Established and operated a laboratory in Tarawa in September 1992;
- * Completed the Lagoon circulation model for the Tarawa lagoon in June 1993;
- * Completed two international study tours (Hawaii, Ponape, Marshall Islands, and one to FSM and Marshall Islands);
- * Completed two participation workshops in Tarawa, attended by representatives from twenty villages in Tarawa, to discuss the draft Management Plan and the associated management issues; and
- * Completed one of the two documentary videos: "The Bonefish Commentaries" (in 1993). The second video: "My lagoon, My Life" (in 1995), is being produced and efforts are being made to complete it.
- * Established the Tarawa Lagoon Management Council.

4. PNG Component:

The redesigned PNG component, as described in section II.A above, has one main goal to increase the exports of high value marine products, mainly tuna. To achieve this goal, the project purpose focussed on improving the environment for engaging in commercial fishing operations by PNG companies, including constructive and supportive government policies and regulations, identification of export markets, the provision of relevant information on appropriate boats, gear and fishing techniques to potential investors, and identification of financing options for new fishing ventures.

The project's original strategy was to undertake three distinct but related activities (three phases), which taken as a package should achieve the goal and purpose of the project. However, with the closure of the RDO/SP office in September 1994, funding for the PNG project was substantially reduced and the planned phase 3 of the project was subsequently eliminated.

Phase 1: SPC-PNG Pilot Tuna Longlining Project:

The project provided support to the SPC Tuna Longlining project in the East New Britain Province (ENB) of PNG, with the objectives to obtain findings regarding the most suitable vessels, equipment and methods of fishing and processing/marketing tuna. The project specifically focussed on:

- * demonstrating that large sashimi grade yellowfin (*Thunnus albacares*) and bigeye (*T. obesus*) tunas with export market potential could be consistently caught and landed and economically in ENB using a variety of fishing methods from 10-20 meter vessels, fitted with monofilament longline reel and manned by local crews;
- * marketing tuna internationally and eventually privatize the operation, or to encourage the private sector to step in and develop a fresh-chilled sashimi tuna export venture in ENB or in other parts of PNG (a longer term goal);
- * identifying the constraints to such a venture so that government and industry, working with such bodies as PNG's Fishing Industry Association (FIA), will be able to influence the PNG government to change the restrictive regulations and improving infrastructure to assist the development of a local as well as an integrated tuna export industry.

During the period June 1993 to September 1994 (fifteen and half months), the SPC project team undertook the pilot longline fishing program in ENB waters using the monofilament system. Despite the constraints (as detailed in the final SPC project report) faced by the project team, the project successfully completed all the project tasks and accomplished the following outputs:

- * Deployed three FADs and fisheries staff trained in all aspects of FADs survey, rigging and deployment;
- * Successfully demonstrated the success of the monofilament longline sashimi tuna capture system to ENB fishermen;

- * Obtained excellent data on the availability and catch rates of sashimi quality tunas using the monofilament system; Project operations have shown the present of an abundant tuna resource in the ENB waters;
- * Showed that domestic longline fishing in the Islands region of PNG could become a viable fishing industry; the resource is abundant and the tunas are of the size range to place them in a high bracket for the Japanese sashimi market.
- * Obtained encouraging results from the export marketing trials to Japan;
- * The private sector became involved in the fishery at the end of the project;
- * Market trials successfully promoted tuna products, which are now marketable in the local restaurants and hotels; and
- * Identified the constraints to establishing the export sashimi tuna fishery in PNG.

Some random statistics to indicate the achievements by the project operations:

- * Total project catch: 551 fish (20,354 kg = 20 tons) with YF catch of 15,826 kg (70% of catch);
- * The Catch per Unit effort (CPUE) achieved by the project during the trial period was about twice the average for the area monitored by SPC. CPUE for the project was 118kg/100 Hooks (all species), and 92kg/100 Hooks (Yellowfin);
- * Total project revenue: Kina 15,045;
- * Two private companies now investing in the LL fishery.

Phase 2: Support for Fishing Industry Association (FIA)

The project involved the strengthening of the FIA, established in 1991 and based in Port Moresby, to enable it to maintain a steady campaign for the establishment of supportive fishery laws, policies and regulations. The aim was to attract further assistance to FIA to finance programs to increase private sector awareness of opportunities for investment in new resources. The support provided included: short-term technical assistance, commodities, administrative expenses, international study tours and seminars and

workshops. FSP, PNG coordinated the implementation of the project activities through a cooperative agreement with USAID.

Despite the overall reduction in the budget (from \$3 million to \$440,000) for the PNG component following the termination of the planned phase 3 activity, as well as the budget reduction for phase 2 (from \$500,000 to \$240,000), the subproject still managed to accomplish the following outputs:

- * Strengthened FIA which played major roles in (1) the formulation of the management plan for the prawn industry, (2) formulation of policies covering the certification of fishing vessels, and (3) the review of the Department of Fisheries and Marine Resources (DFMR);
- * FIA membership increased from 12 to 34 members, mostly fishermen and business people from associated industries;
- * Facilitated private sector investment through FIA involvement: established a seamen register, and the National Fisheries Authority (NFA), a semi statutory body to replace the DFMR, which will be run by a Board of Directors, with the FIA being represented in the board;
- * Organized seminars, trade fairs and international study tours for FIA members and fisheries staff;
- * Increased public awareness through publication of FIA newsletters;
- * Achieved major domestic investment in the Tuna longline fishery, which has been declared a domestic fishery as from June 30, 1995, with all foreign licenses being terminated.

As noted in the FIA Annual Report 1994/1995, much has been achieved, the goals mostly exceeded in half the time proposed, but more remains to be done in order to reinforce the benefits acquired by FIA under the project activities, and to resolve the remaining development policies and regulations and achieve the environment required for establishing the domestic fishing industry in PNG. The remaining issues to be resolved include: basic training at deck-hand level, access to credit, streamlining of export procedures, certification of fishing vessels and associated regulations, including safety standards for LL vessels, and the need to review duties and other taxes to allow for competition with foreign firms.

5. Tonga: Tuna Longlining Project:

The objective of the subproject was to adapt large-boat tuna longline techniques to smaller boats, and to assess the

commercial feasibility of these techniques.

The contractor, RDA International, Inc. began the operations in November 1991, and completed the field activities on September 30, 1994, and the final reports in December 1994.

As contracted, RDA's workplan focussed on the following specific tasks:

- * Assessment of small scale tuna fishing: tested gear efficiency, lower cost fishing gear and equipment, and explored market opportunities with higher returns;
- * Tested three sizes vessels (28', 35', 40'), and made comparison of open ocean fishing with seamounts and fish aggregation devices (FADs) fishing;
- * Designed prototype vessel for tuna fishing;
- * Assessment of bottomfish and baitfish stocks in Tongan waters, and preparation of management plans for the respective resources;
- * Training: on-the-job training for 2 counterparts, three international study tours; and
- * Tested a larger longline system (a new task added).

The project also funded one Tongan candidate to undertake a Diploma in Fisheries at the University of the South Pacific.

The project was completed on time, and within budget, with excellent results. In all the activities, all the planned targets were met and exceeded, and project results were translated into private sector investment, with Tonga having established a profitable high-quality tuna export industry based on small-scale artisanal vessel operations.

At the end of the project, RDA had successfully completed all of its contractual tasks. The Tonga project produced the following outputs:

- * Completion of trial fishing operations;
- * Assessment of finding on the viability of small-scale tuna fishing vessels and methods, and appropriate technology published and widely distributed;
- * Introduction of small-scale tuna fishing gear and methods to the existing local fleet and/or design of a prototype vessel with appropriate gear and fishing methods;

- * Completion of stocks assessment and formulation of management plans for Tonga's deep bottomfish and baitfish resources.

Some statistics to indicate the success of the subproject included:

- * Using the horizontal small-scale longline system: 50 days fishing produced total catch of 40 tons, 20 tons were of high quality tuna. Catch rate achieved: 10.6 fish/100 hooks, five times higher than the regional figures. Catch rate at seamount: 13 fish/100 hooks. By comparison, the catch rate for the larger LL gear system: 2.02 fish/100 hooks (much lower).
- * Revenue from fish sales (local and exports): Over T\$92,000
- * Fabricated 20 FADs, deployed 9 FADs.
- * Economic analysis report of Tonga LL completed in July 1994, and indicated that tuna fishing operation using small 40-45 ft vessels and small gear system would obtain IRR exceeding 50%, whereas using larger boats and using the standard 32 km LL showed a non-profitable operation.
- * Market trials: Favorable prices achieved in Japan, Hawaii, New Zealand and Australia, and Tongan fish met the criteria of these markets. The success encouraged local fishing operations to begin exporting to Hawaii, Japan and New Zealand. Export market results: 36 shipments (271 fish = 7.8 tons) made in 1993, and 2 shipments (500kg) in 1994.
- * Baitfish: The project produced one of the most thorough studies of large baitfish in tropical Pacific. The project concluded that the baitfish resources around Vava'u is sufficient to support a self-sustained baitfishery.
- * Bottomfish: The project produced a management plan for the Tongan bottomfish resources, which recommended limited entry and limited effort as viable management measures.

6. Tuvalu Bottomfish Fishing Project

The purpose of the subproject was to adapt and apply new fishing technologies and fisheries management strategies to expand small-scale commercial fishing operations, targeting initially on the bottomfish resources. To achieve this

purpose, the project focussed on two aspects:

- * The successful implementation of project activities, and the long-term viability of the venture depended on the results of the test fishing. If successful, fishing could be transferred to the private fishermen; and
- * The adoption of the technologies tested by private fishermen; private sector development was considered critical to achieving the project objectives, the main objective being to demonstrate and establish the economic viability and commercial feasibility of a bottomfish fishery and export industry in Tuvalu.

Per its contract, RDA carried out the following tasks:

- * Assessed the bottomfish resources to determine the maximum yield of bottomfish within Tuvalu's EEZ;
- * Conducted exploratory (test fishing) as well as commercial fishing trials using new fishing methods;
- * Prepared guidelines for an appropriate bottomfishing boat for Tuvalu (modified task);
- * Conducted export marketing trials (an additional task added during the final year);
- * Formulated a management plan for the harvesting of the bottomfish resources in Tuvalu;
- * Conducted training for Tuvaluan fishermen and technicians.

The project also funded two trainees to undertake Diploma in Fisheries at USP.

RDA International, Inc. began the field operations in September 1991, and despite (1) the delays in the implementation of some of the activities (commercial fishing trials), as described earlier, and (2) pressure to facilitate the completion of the activities following the closure of the RDO/SP office in September 1994, by the end of the field operations on September 30, 1994, all of the contracted outputs were accomplished in time and within budget:

- * Completion of all bottomfish resources assessments, including hydrographic surveys of and test fishing for bottomfish on Tuvalu's seamounts;

- * Completion of final economic evaluation of the potential development of a bottomfishing industry in Tuvalu;
- * Completion of a bottomfish resource management plan for Tuvalu;
- * Produced specifications for an appropriate boat for use in Tuvalu 's bottomfish fishery;
- * Completion of 29 resources assessment and test fishing cruises and 6 commercial fishing trials;
- * Conduct of hands-on training of 23 Tuvaluan fishers in bottomfish operations and gear technology; and
- * Completion of 7 bottomfish export shipments to Hawaii.

Some other project statistics indicating the project achievements included:

- * Deployment of 8 FADs, one near each island;
- * Held 3 bottomfish management workshops for public and private institutions and individuals;
- * Conducted 12 short-term in-country training programs, 11 short-term overseas training and study tours, and 2 long-term Tuvaluan participant training programs with USP;
- * 2 new seamounts discovered and mapped;
- * MSY per year of 84mt estimated for Tuvalu;
- * Catch rate per line hour of effort for bottomfish: 4 kg to 5 kg; and
- * Tuvalu successfully exported high quality bottomfish to Hawaii at prices ranging from A\$9.00 to A\$10.00 per kg

7. SPC Regional Impact Component (RIC)

This component included two elements: (A) the Regional Impact Component (RIC) and (B) support for the SPC Tuna and Billfish Assessment Programme (TBAP).

A. Regional Impact Component:

The purpose of the original grant (\$480,000) to the South Pacific Commission (SPC) was to support the dissemination of PIMAR project results through the

completion of the following tasks:

- (1) The publication and dissemination of technical and general information on the PIMAR country projects through the regular SPC publications and technical reports;
- (2) The conduct of two regional workshops on black pearl culture industry development and finfish fishery development; and
- (3) Training attachments and study tours to PIMAR project countries.

The sub-activity was implemented late in the life of PIMAR (during FY1993), as it depended on the availability of the results of the PIMAR country projects. The initial obligated amount of \$99,779 was used by SPC to hire an information specialist to coordinate information dissemination activities, and also to finance visits to tuna longline activities in Tonga, bottomfishing activities in Tuvalu, and the lagoon management project in Tarawa, Kiribati.

Following the decision to close the RDO/SP office, a submission was made to Washington to extend the RIC and to maintain its original approved budget. The request was however disapproved and modifications were subsequently made on May 1994 to the period of the grant, amount of the grant, and to the project activities. The RIC time frame was finally shortened from September 30, 1995 to September 30, 1994, and the grant budget reduced from \$480,000 to \$99,779. Also tasks no. (2) and (3) above were terminated due to insufficient funding. The remaining grant funds were used to support the information dissemination activities of the SPC.

With the premature termination of the RIC, the planned grant outputs were not met. The following results and impacts should however be noted:

- * The SPC only published a few of the PIMAR project results in its Fisheries Newsletters;
- * The investment made under the PIMAR activities was lost;
- * The potential impact of the investment was limited only to the PIMAR countries;
- * The regional impact of PIMAR was also lost; and

- * The distribution of the final PIMAR project reports to the regional countries became an issue at the end of the PIMAR project.

B. Support for SPC Tuna and Billfish Assessment Programme (TBAP):

The SPC's TBAP collected and analyzed data on tuna and billfish within the SPC's region (the South Pacific). The information formed the basis for the management of pelagic tuna and billfish stocks. TBAP provided technical assistance to island countries in data collection, analyses, and formulation of their national management plans.

The 1991 PIMAR PP supplement and project amendment authorized additional funds to support the TBAP. The purpose of the \$245,000 grant was to assist the TBAP to develop national capability to support regional tuna research and improve information flow to the private sector (An earlier grant of \$55,000 for TBAP supported the collection and analysis of historical U.S. purse seine data, including technical assistance to provide one National Marine Fisheries Service (NMFS) Scientist on attachment to the TBAP).

The new TBAP grant focussed on achieving the following objectives:

- * to encourage national self sufficiency in the entry, verification, and basic analysis of tuna data provided by DWFN and domestic fleets to island countries;
- * to develop appropriate self-sustaining national monitoring activities (port sampling of catches and biological sampling);
- * to enhance national capability to provide timely reporting to public and private sectors through the provision by TBAP of tuna resources assessment and historical catalogue of tuna catch and effort data within national EEZs;
- * to enhance TBAP capability to respond to public and private sector information needs; and
- * to initiate cost recovery action for TBAP activities, targeting 10% over a two year period.

Support for the TBAP has been a long term commitment of USAID. Following implementation of the two years grant, TBAP accomplished all its planned outputs:

- * Developed national sufficiency in basic analysis of tuna data (FSM, Marshall Islands, Solomon Islands and Kiribati);
- * Developed national monitoring and national sampling systems in FSM, Fiji, Marshall Islands, French Polynesia, and New Caledonia;
- * Published national fishery assessments and catalogues of historical catch and effort data (Solomon Islands, PNG, Palau, Tuvalu, Marshall Islands, Tonga, Nauru, New Caledonia and Wallis & Futuna);
- * Enhanced TBAP information capacity: prepared and published the quarterly Tuna Bulletins, and disseminated them to 400 people, of whom 50 were paid subscribers (US\$2,500); and
- * TBAP exceeded its target of 10% cost recovery, from consultancy services, and subscriptions to regular publications.

Summary : Expected Outputs and Accomplishments

PROJECT	EXPECTED OUTPUTS	ACCOMPLISHMENTS
<p><u>COOK ISLANDS</u></p> <p>Cook Islands Pearl Oyster Project</p>	<ul style="list-style-type: none"> . Established of a marine research center. . Suitability of pearl farming tested and evaluated in the northern group group of Cook Islands. . Pearl farming methods adopted by farmers per the Lagoon Management Plan. . Farmers trained in pearl farming techniques. . Extension agents trained in lagoon pearl farming methods. . Transfer pearl farming potential to other Pacific Islands. 	<ul style="list-style-type: none"> . Established and operated the TMRC in August 1995 . Established lagoon water quality monitoring programs, as well as a spat collection program. . Established an hatchery - 3 successive spawning trials achieved. . Established an extension training program for farmers. . Trained MMR in lagoon research work and spat collection techniques. . Established 40 private farms in Penrhyn lagoon.

PROJECT	EXPECTED OUTPUTS	ACCOMPLISHMENTS
<p><u>FIJI</u></p> <p>Lami Jetty Project</p>	<ul style="list-style-type: none"> . Extension of Lami Jetty facility and support facility. . Introduction of local suppliers to U.S. manufacturer and export. . Provision of assistance for privatization and policy reform opportunities - to create business environment. 	<ul style="list-style-type: none"> . Completed the renovation of the Lami Jetty and on-shore support facilities. . Provided an operational and self-contained Jetty facility - the most efficient in the country. . Improved the handling of catches and therefore the quality of products for exports.
<p><u>KIRIBATI</u></p> <p>Tarawa Lagoon Management Project</p>	<ul style="list-style-type: none"> . Completion of stock assessments for shellfish and finfish in Tarawa lagoon. . Impacts of landbased activities (causeways, sewage etc) on lagoon ecosystem established. . A Management Plan for the Tarawa Lagoon formulated and established. 	<ul style="list-style-type: none"> . The production of a comprehensive Management Plan for the Tarawa lagoon. . Production of one documentary video; one video incomplete. . Public awareness of the Tarawa lagoon problems established.

PROJECT	EXPECTED OUTPUTS	ACCOMPLISHMENTS
<p><u>PAPUA NEW GUINEA</u></p> <p>PNG - SPC Tuna Longlining Project (PNG - Phase 1)</p>	<ul style="list-style-type: none"> . The presence of large sashmi grade tunas with export potential proven. . The success of the small-scale tuna longline techniques tested. . The economic viability of marketing sashmi tuna to overseas markets demonstrated. . The identification of constraints to the development of an integrated tuna export industry in the Islands region of PNG. 	<ul style="list-style-type: none"> . Successfully demonstrated the success of the monofilament sashmi tuna capture system. . Excellent data obtained on the catch rates of sashmi quality tunas. . The viability of a domestic a tuna loneline fishing industry proven.
<p>PNG - FIA Support (PNG - Phase 2)</p>	<ul style="list-style-type: none"> . A strengthened FIA with support facilities. . Participation of FIA in fisheries related activities. . Availability of technical assistance for on-going FIA programs. 	<ul style="list-style-type: none"> . FIA strengthened with an established office and supporting executive staff. . FIA membership increased to 34. . Public awareness on fisheries issues increased through FIA publication. . Good working relation between FIA and GOPNG established.

PROJECT	EXPECTED OUTPUTS	ACCOMPLISHMENTS
<p><u>TONGA</u></p> <p>Tuna Longlining Project</p>	<ul style="list-style-type: none"> . Lower cost tuna longlining gear and equipment successfully tested. . Type of boat most appropriate for small-scale longlining identified. . Management Plan for bottomfish formulated. . Completion of baitfish study in Vava'u area. 	<ul style="list-style-type: none"> . Tuna longlining trials successfully completed. . Small-scale tuna fishing gear and methods tested and being adopted by Tonga's private sector. . Management Plan for bottomfish and baitfish resources formulated. . Excellent report on the available baitfish resources produced.
<p><u>TUVALU</u></p> <p>Bottomfish Fishing Project</p>	<ul style="list-style-type: none"> . Successful bottomfish fishing trials achieved in Tuvalu's EEZ. . The successful marketing of Tuvalu bottomfish products. . Formulation of a Management Plan for the bottomfish resources. 	<ul style="list-style-type: none"> . Resources assessments completed. . Test fishing as well as commercial trials successfully carried out. . Production of <ul style="list-style-type: none"> * Final economic evaluation of the bottomfish industry in Tuvalu. * Bottomfish resource Management Plan. . Successful Export Marketing trial undertaken.

PROJECT	EXPECTED OUTPUTS	ACCOMPLISHMENTS
<p><u>SOUTH PACIFIC COMMISSION - RIC</u></p> <p>1. Regional Impact Component (RIC)</p>	<ul style="list-style-type: none"> . The publication and dissemination of PIMAR results to other Pacific countries. . Conduct of regional workshops and study tours. . Training attachment completed. 	<ul style="list-style-type: none"> . PIMAR results disseminated to PIMAR countries only following the termination of RIC. . No regional workshop and study tours undertaken.
<p><u>SOUTH PACIFIC COMMISSION - TBAP</u></p> <p>2. Tuna Billfish Assessment Project (TBAP)</p>	<ul style="list-style-type: none"> . National self-sufficiency in basic analysis of tuna data provided. . National capability to provide timely reporting on tuna data to private sector enhanced. 	<ul style="list-style-type: none"> . National sufficiency in basic data analysis developed in four countries. . National monitoring sampling systems established in five countries.

B. Summary Impact

Before discussing the impact of the PIMAR subprojects, it is also important to document the reasons why some of the subprojects did not achieve their planned outputs. The sudden closure of the USAID/RDO/SP office (RDO/SP) in September, 1994 and its impact on the implementation of the PIMAR subprojects seemed to be main cause for the failures of most of the PIMAR subprojects to achieve some of their planned outputs.

Following the decision by AID/Washington to close the RDO/SP office in Suva, Fiji by September 30, 1995, the PIMAR components in Kiribati, Tuvalu, Tonga, and Fiji, as well as the SPC regional impact component were subsequently closed on September 30, 1994, leaving only two components in the Cook Islands and in PNG, which continued to August 31, and June 30, 1995 respectively. This meant that the PIMAR PACD was being terminated two years before its newly amended completion date of September 30, 1996. The closure of the RDO/SP office therefore contributed to the following **negative events**:

Overall Impact on PIMAR:

* The authorized PIMAR project budget of \$13.7 million was reduced by about \$2.9 million, resulting in reduced budgets for the components in the Cook Islands, PNG, Fiji, and the SPC RIC, as described in earlier sections.

PIMAR Coordination and Management:

* The shift in project management to USAID/Philippines after July 1994 resulted in additional administrative costs being incurred by the newly created USAID Trade Development office in Suva. The implementation of the field work was also affected due to the distance between Suva, Fiji and Manila, Philippines, and the time taken for decisions to be made relating specifically to implementation issues.

* USAID/Philippines did not have the funds (PD&S) needed to complete the extended subprojects (Cooks and PNG), neither did it had the authority to reprogram the unexpended project funds under some of the subprojects (e.g. the RDA Tuvalu contract about \$50,000 unexpended) to complete contracts in other countries (e.g. the RDA Cook Islands contract).

Specific Impact:

* Most of the implementation workplans under the individual projects had to be modified to allow for the completion of the important field activities by the project completion dates; some of the planned activities (e.g. project evaluation) were

eliminated due to the reduction in the project budgets and reduction in life of projects;

* The commercial fishing trials under the Tuvalu and PNG (phase 1) projects had to be terminated earlier. The final results (as reported) may not be sufficient for proper economic analyses of the fisheries potentials to be carried out;

* The planned phase 3 of the PNG component was also eliminated due to the reduction in the PNG project budget;

* The planned phase 2 and 3 of the Fiji component were eliminated due to the non-availability of the third tranche of ESF funding (\$300,000) and the reduction of the PACD from September 30, 1995 to September 30, 1994); the changes subsequently reduced the benefits the Fiji private sector would have obtained under the project;

* The time given to the contractors to complete their contract tasks (preparation of technical and final reports) was also greatly reduced;

* The early termination of the SPC regional impact component on September 30, 1994 meant that the SPC could not achieve the objectives of the RIC; i.e. to distribute the PIMAR results to the regional countries and institutions. USAID or the PIMAR countries had to distribute the final reports.

Due to the sudden closure of the RDO/SP office in September 1994, and its subsequent impact on the completion of the PIMAR subprojects (as described above), plus the fact that no time was available between the final PIMAR PACD (September 30, 1995) and the closure date for the USAID Trade Development Office (also September 30, 1995), these factors combined to make it impossible to document a detailed quantitative account of the impact of all the PIMAR subprojects. We need to have at least several more years following the termination of the PIMAR assistance for some of the activities supported and tested under it to achieve their objectives, depending also on the capacities of the countries concerned at that time to acquire the resources and to establish the required financial arrangements to sustain the activities. Only then can we expect to see the real impact of the activities.

Despite the above, an attempt has been made to document, by categories, the benefits directly related to the impact of the PIMAR subprojects. The first category involved those PIMAR components which completed the field work between September and December 1994 (Fiji, Kiribati, Tonga, Tuvalu, PNG (phase 1), SPC RIC, SPC TBAP); the second category

included the subprojects which had continued up to June 1995 (PNG phase 2) and September 1995 (Cook Islands). In these summaries, the short-term benefits, including projections for the long-term impact of the subprojects where appropriate, have been described.

September 1994 Project Closures:

As mentioned earlier, had the RDO/SP office continued to operate beyond the planned and newly amended PIMAR PACD of September 30, 1996, the implementation of the following subprojects might have slowed down, and all the planned objectives might have been achieved.

1. Fiji Lami Jetty Project:

Following the completion of the Lami Jetty, it immediately provided a one-stop service (unload catch, load supplies and ice and take on water and fuel as well as docking space) to at least six boats at one time. The following benefits were subsequently realized as being due to the impact the project has had on the fishing industry in Fiji:

- * The private longline fishing industry increased its fleet from 20 (1993) to 50 (1994); this number might increase further in future as the impact of the jetty's operation becomes evident;
- * The increase in the number of boats resulted in a large increase (from 750 in 1993 to 7500 in 1994) in the number of jobs created to operate the boats and also other associated onshore operations (handling and packing, etc.);
- * The tonnage of fish exported (to the U.S. and Japan) doubled (from 70 tons a week in early 1994 to 150 tons a week) since the completion of the jetty in late 1994.
- * The revenue from fish exports increased from \$18 million (1993) to \$57 million (1994). It was therefore concluded that the economic impact of the jetty has exceeded its cost of US\$600,000.
- * The Air Pacific flights which exported all the fish exports to the U.S. and Japan also increased its revenues from freight charges.

2. Kiribati Tarawa Lagoon Project:

In the short-term, the following benefits can be reported as due to the impact of the project:

- * Through the research and resources assessment program, the project provided real time information on: (1) the status of the stocks of shellfish and finfish resources in the Tarawa lagoon; (2) the impact of land-based activities on the lagoon water quality, and the marine resources yields, and (3) the public health issues related to the consumption of the lagoon resources.
- * Through the specific recommendations formulated based on the findings, the population of some of the main finfish species (bonefish, goatfish, etc) could be maintained if government take immediate actions on those recommendations;
- * Through the two public participation meetings, and project newsletters, the project created public awareness on the status of the lagoon, and led to public discussions of the project findings and associated issues, which resulted in the formulation of an appropriate management plan for the Tarawa lagoon. For the first time, the public became concerned with the status of the lagoon, and this might influence or put pressure on government to work with the public and the village communities to implement the Tarawa lagoon management plan, as formulated under the project.
- * The project provided the Government of Kiribati with the basic laboratory facility to continue the on-site assessment and monitoring of the status of the lagoon, as demonstrated under the project. Through the training provided under the project, a number of I-Kiribati personnel have been trained in lagoon monitoring techniques, and formed the core of the personnel needed to implement the management plan. These activities have immeasurably strengthened government's technical capability to do surveys, and to continue the lagoon monitoring program in conjunction with regional institutions, including USP's Atoll Research Programme, based on Tarawa.

In the long-term, if the management plan, as formulated, is finally implemented, the additional benefits might include:

- * The establishment of the Tarawa lagoon Management Council, as recommended in the management plan;
- * The restoration of the lagoon resources, the maintenance of the finfish and shellfish stocks, and the prevention of public sickness due to the continuing consumption of contaminated shell fish.
- * The success of the lagoon project activities have provided the impetus for follow-on donor funding to continue the efforts already made under the project activities.
- * The South Pacific Regional Environment Programme (SPREP), in conjunction with the USP, might be encouraged to assist the GOK in financing the implementation of part of the Tarawa Lagoon Management Plan.

3. Tonga Tuna Longline Project:

In the immediate term:

- * Following the successful tuna longlining fishing and marketing trials, the project results were successfully translated into private sector investment, and a profitable high quality tuna export industry based on small-scale artisanal vessel operations was established.
- * The training conducted under the project improved the GOT's technical and management capability to develop and to sustain the small-scale tuna fishing and tuna marketing activities;
- * The project's efforts resulted in a new dialogue and the beginning of a cooperative partnership between the Ministry of Fisheries and the private sector (fish operators), which historically have been at odds with each other;
- * The implementation of the new bottomfish management plan would probably conserve Tonga's bottomfish resources for several more years. The timely development of the Tongan small-scale tuna LL fishery would indirectly support this aim.

- * The baitfish study and baitfish fishing trials demonstrated that the large baitfish resources around Vava'u is sufficient to support a small-scale large baitfish fishery.

In the long-term, the project is expected to produce the following benefits:

- * Based on the success of the project fishing and marketing trials, the Banks in Tonga or the donor community might be encouraged to provide additional investment in vessels, gear, and equipment to establish the industry;
- * The GOT might also be encouraged to establish an in-country training program for fishermen, involving commercial fishing, fish handling, processing, and marketing techniques.

4. Tuvalu Bottomfish Fishing Project:

The project has provided the following immediate benefits:

- * The project fishing and marketing trials demonstrated for the first time, that the bottomfish resources in Tuvalu waters is sufficient to support a modest bottomfish export fishing industry. This real time information should be the basis for future government and private sector investment to develop and establish the industry, within the framework of the Bottomfish Management Plan formulated under the project;
- * The project results showed that bottomfish can be exported to overseas markets, even from isolated countries like Tuvalu, and has encouraged the GOT to seriously consider continuing developing these markets;
- * The training provided under the project has improved GOT's technical and management capacity to develop the fishery, and has encouraged the GOT to seek funding to continue training for its fishermen and technicians.

In the long-term, the GOT might also achieve the following benefits:

- * Subject to GOT's final strategy for the development of the industry, the continuation of the fishing

and the marketing trials, as demonstrated under the project, would provide more information for the preparation of a more detailed economic analysis of the fishery, and should enable the GOT to formulate and implement an appropriate long-term development plan for the industry.

- * The development opportunities indicated under the project might justify the formulation of a commercial investment plan for the development of the industry, and could involve the development of infrastructure, appropriate vessels and a comprehensive manpower training program, including the participation of the private sector.

5. **PNG Phase 1: Pilot Tuna Longlining Project:**

Immediately following the completion of the project activities, the following benefits became visible:

- * The successful fishing and marketing trials undertaken by the project encouraged two local companies to invest in the small-scale tuna longline fishery, indicating the involvement of the private sector in pioneering the development of the industry;
- * The training provided by the project produced a core of trained PNG fishermen to continue the development of the fishery;
- * Following the market promotions carried out by the project, the demand for tuna products in the Islands Region increased, indicating one development potential opportunity for the private sector; and
- * The project demonstrated the viability of a sashimi tuna fishery in PNG's Islands Region, and provided encouragement for the Province to continue the production and shipments of large tunas to the Japanese tuna sashimi market.

In the long-term, the project results would encourage the East New Britain (ENB) Province to seek additional funding from government or from the private sector to continue the fishing and the marketing trials. However, implementing this development option might depend on the national government's development policies for the Islands region. The private operators, could

develop the abundant tuna resources, and develop the fishery as required.

6. **SPC Regional Impact Component:**

- * Research which ends up on bookshelves without dissemination and application is not very useful, and will have no impact on future development efforts. This is a perfect statement for the impact of the RIC. Following its premature termination (as described earlier), the project failed to achieve its planned objective to disseminate, throughout the region, the results of the PIMAR country subprojects. The results of PIMAR country projects were made available only to the PIMAR countries, although efforts were made to provide some regional institutions with copies of the final reports for some of the subprojects.
- * The failure of the RIC meant that the investment made under PIMAR might have been lost.

7. **SPC TBAP:**

- * Because funding for the TBAP was from a number of donors, the closure of the RDO/SP office and the termination of the USAID assistance for TBAP, had no real impact on the TBAP. The TBAP has however, been a successful regional program, which has successfully promoted fisheries stability in the South Pacific, and has served the interests of the U.S. tuna fishing industry in the region, particularly those vessels operating in the region under the Multilateral Fisheries Treaty between the United States and sixteen independent South Pacific Forum countries.

1995 Project Closures:

1. **PNG Phase 2: Support for Fishing Industry Association:**

- * Through the project assistance, the Fishing Industry Association was strengthened, and became better organized, and equipped with the administrative capacity and the ability to reshape its vision and mission.
- * The FIA also became deeply involved in efforts to facilitate private sector investment in the fishing industry;

- * The FIA publications increased public awareness of the problems and also the opportunities in the industry;
- * The project resulted in excellent working relations between the private sector (FIA members) and government agencies, and has kept Government informed of the key fisheries issues.

2. Cook Islands Black Pearl Project:

- * With the establishment of a well equipped marine research center in Tongareva, the project has provided the basic facilities and well as the technologies to support the development of the black pearl culture industry in the Northern group of the Cook Islands;
- * The Tongareva Marine Research Center is an important asset not only for the Cook Island government, but also other regional governments with interests in developing their black pearl industries;
- * Despite the lack of qualified local staff currently attached to the center, the training provided under the project has prepared the Ministry of Marine Resources to take over the center after August 31, 1995.
- * The establishment of the research center has invited technical assistance from other donors (ADB) to continue assisting in the training of staff to operate and manage the center.

The ADB has signed a memorandum of understanding with the GOCI for a technical assistance program, to provide assistance for operation of the TMRC and with the training of MMR staff at TMRC. A final shortlist of applications has been finalized, and it is expected the final candidate to lead the program will be selected in a during October, 1995.

In the meantime, MMR has made the following interim arrangements:

- * One biologist has been brought on site to continue the spawning trials;
- * One other biologist from Manihiki will also be assisting the TMRC operation; and

- * Ben Ponia (the former counterpart to RDA COP) will return to Penrhyn for Christmas, and will also assist with the TMRC operation.
- * The lagoon monitoring program, the spat collection program as well as the operation of the hatchery, if kept in operation, would ultimately assist the establishment of more pearl farms and the development of the pearl industry.

C. Assessment

To some extent, the PIMAR project has achieved the main goal of the Regional South Pacific Development Strategy Statement (RDSS) and Management Action Plan, that is, it has increased development opportunities in the PIMAR countries from the development of their marine resources.

Despite the very wide scope of PIMAR, as described in the PP, and the diverse number of marine resources activities it supported, an examination of the summary of highlights or achievements (preceding sections) would indicate that the real PIMAR scope (as amended), and the extent it succeeded in attaining its various objectives is "truly remarkable". Also considering the many problems encountered during the start-up of some subprojects, and also the problems experienced during the implementation of the individual subprojects, coupled with the difficulties (mainly the reduction of the PIMAR budget, following the closure of the RDO/SP office) in the final two years, PIMAR's achievements were extremely encouraging and also "mind boggling".

The new mechanisms for assistance delivery and the new approaches adopted under PIMAR have resulted in the establishment of successful and viable commercial fisheries: bottomfish fishery (Tuvalu), small-scale tuna longlining fishery (Tonga and PNG), and also research-based marine resources management plans to protect the lagoon (Tarawa lagoon management plan - Kiribati), inshore (Tonga bottomfish management plan), and offshore resources. PIMAR also strengthened the private sector fishing associations (Fishing Industry Association (FIA) in PNG, and Deepsea Fishermen Association (DFA) in Fiji) and ensured the involvement of the private sector in the fishing industries. PIMAR has therefore left behind in the countries concerned "visible useful units", which should, in the long-term, benefit the countries, if the operation of the units could be sustained.

The above achievements indicated that two of PIMAR's three strategies, relating specifically to private sector development and natural resources management, have successfully achieved useful outputs. The third PIMAR strategy aiming at sustaining the

operation of the activities, after the end of the project assistance, was not achieved. This can be explained by the difficult circumstances relating to the availability of project funding (especially during the final two years), and more importantly due to impact of the closure of the RDO/SP office on the implementation of the subprojects, as fully described in earlier sections. Had the RDO/SP office continued to operate, the PIMAR would have been fully funded, and the \$2.9 million lost by PIMAR due to the budget cuts after the closure of the office would have been fully utilized to complete the planned activities under its subprojects. Also, PIMAR could have continued up to its original PACD, and all the planned activities would have been completed thus achieving the objectives which were not achieved.

In nearly all the PIMAR subprojects, the countries needed sustained funding and technical assistance, at least for a couple of years after the PACDs. This would have ensured that the countries concerned were given the opportunities not only to develop the infrastructure and logistic supports needed, but also to establish training institutions (to provide skilled manpower) and fishing organizations to coordinate the fishing activities. Such actions could have better prepared the countries to take over the PIMAR activities. It would also have provided some guarantees that the activities would be continued on a sustainable basis. How can we expect the PIMAR countries to take over and sustain the activities overnight, without the funding support required?? It is unrealistic to expect this to happen. In this regard, although the PIMAR subprojects, as reported earlier, have achieved successful outputs, the future continuation of those activities on commercial basis by the private sectors in the countries concerned, as was original intended, cannot be confirmed. The elimination of the SPC regional impact component also reinforced this problem relating to the non-sustainability of the PIMAR activities. As the PIMAR results were available only to the countries concerned, the information acquired was not widely distributed in the region as originally intended.

As PIMAR is a comparatively large project by regional standard, more efforts could have been made during the implementation period, to address the issue of sustainability in detail. The elimination of the project evaluation task because of budget cuts did not help the situation; I believe that had we carried out the planned project evaluation, we would have identified appropriate activities which could have satisfied the sustainability concerns for most of the subprojects. Had USAID not terminated the project prematurely, appropriate modifications could have been made, and the required funding could have been identified and added to the PIMAR budget. The closure of USAID in the region had indeed negatively impacted the overall success of the PIMAR project.

V. FINAL AND POST-PROJECT RESPONSIBILITIES

Prior to the PIMAR PACD of September 30, 1995, the following activities were carried out:

1. **Reports:** Review and acceptance of final reports for all the subprojects, and distribution of reports to the countries and selected regional organizations (FFA, and SPC) and institutions (USP).
2. **Disbursement of Project Funds (by USAID/Manila):** Approval and processing of final payments to the U.S. contractors and U.S. PVOs, and Grantees (SPC);
3. **Deobligation of project funds (by USAID/Manila):** After all contractors and grantees have submitted their final vouchers, approximately \$***** is expected to be available for deobligations.
4. **Property Accountability (by USAID Trade Development Office, Fiji):** All the non-expendable property procured under the respective PIMAR subprojects, including those purchased for use by the contractors (including the Fisheries Advisor in Suva, Fiji), were accounted for and inventoried. Formal letters to transfer the equipment to the governments were prepared and countersigned, and with copies kept for audit purposes.
5. **Project Monitoring Responsibilities:** Once the final reports for the subprojects were received by USAID and accepted for distribution, USAID has no continuing responsibility for monitoring the PIMAR activities. However, the pertinent issues discussed in this report, and the lessons learned should be brought to the attention of appropriate AID and the PIMAR government officials. **Note:** It should be noted that by the time of this report was drafted and finalized, most final reports for the PIMAR components have been received and accepted, with the exception of the final reports for the Cook Island and the PNG (phase 2) components.

VI. PROJECT EVALUATIONS

As described in previous pages, the formal project evaluation task was eliminated, following the closure of the USAID office in Fiji, and the subsequent reduction in the PIMAR budget. This has indeed impacted the success of the PIMAR projects as discussed earlier.

However, throughout the implementation of the PIMAR projects, the progress of the activities were assessed and discussed during

the meetings of the respective Project Coordinating Committees (PCCs), which were established under each subproject. The decisions made by these PCCs often resulted in modifications being made to the project elements. The work of the PCCs contributed to the success of the PIMAR projects.

The quarterly and also the monthly progress reports produced by the contractors, also assisted with the monitoring of the activities during implementation. These reports were often used as the basis for the PCC meetings.

After the transfer of the PIMAR management to USAID/Manila in July 1994, USAID/Manila also held regular quarterly reviews of the PIMAR projects, using the quarterly progress reports from the contractors and also the project status summary reports from the Fisheries Advisor based in Suva, Fiji.

VII. LESSONS LEARNED/RECOMMENDATIONS

The following lessons and recommendations apply to the overall PIMAR project aspects of design, implementation, and closeout activities:

1. Project Design

PIMAR has demonstrated that worthwhile projects can eventually emerge from a Learning Process program design. The PIMAR design could have been improved had the Mission conducted the usual internal reviews and revisions before the draft PP was submitted to Washington, for final approval. (I should note that I was not involved in the review team which cleared the draft PP). The design effort was carried out over a relatively short time, with insufficient consultation with countries and with Mission staff regarding the draft PP. As a result, the PP contained inconsistencies, omissions and unrealistic budget inputs, as well as the inappropriate implementation arrangements. The Mission also had to ask for additional funding to fully fund the planned activities.

Lessons Learned: As PIMAR was one of the first project designed to meet the goals of the new RDSS and Management Action Plan, the PP team should have taken a longer schedule for the design and should have allowed for more discussions of the draft PP.

Recommendation: USAID should pay more attention to how future large projects are scheduled and designed.

2. Project Start-up (PNG, Cook Islands, Fiji, Tuvalu, Tonga)

As reported earlier in this report, it took almost a year after authorization for most of the subprojects to get started, and for project teams to get mobilized to project sites.

Lesson/Recommendation: Avoid being optimistic, and allow more time for projects startup.

3. Project Closeout

With the delays in project startup (at least 2 years for most components), and then the premature closures of the activities in September 1994 following the closure of the USAID Mission in Fiji in September 1994, the actual implementation period for most activities was only about 2 to 3 years. Also with the funding delays, most of the subprojects were not even ready for closeout by the expiration of the new termination dates. The situation made it difficult to properly carry out and complete a host of administrative, logistical, and financial management closeout details, after the contractors have submitted their final reports.

Lessons Learned/Recommendation: Avoid closing the subprojects prematurely, at the expenses of the technical aspects of the subprojects, and allow more time for proper projects closeouts. To avoid the above situation, it would appear reasonable to authorize say six to seven years for a project such as PIMAR with an operation life of five years.

4. Project Evaluation

Undertaking the mid-term and final evaluation tasks, as planned, would have indicated the modifications needed under each subprojects in order to improve and modify the implementation plans, including the inputs. The elimination of the planned evaluations seemed abnormal, and was a good case of an administrative requirement (i.e. the decision to close the Mission) being satisfied at the expense of achieving the goals of PIMAR.

Recommendation: USAID should try and follow its normal program procedures, which required that large multiple projects such as PIMAR, should be evaluated.

Other Lessons from PIMAR subprojects:

5. Regional Impact:

An important aspect of the overall PIMAR project related specifically the transfer of the PIMAR results the region. The SPC was charged with this responsibility, through newsletters, publications, workshops and other mechanisms.

The premature termination of the regional impact component meant that USAID had not utilized the efforts put into the design of the planned activities, which would have satisfied the important goal of the regional impact component.

Lesson: USAID has missed the opportunity to introduce the appropriate technologies which were successfully tested and proven under the PIMAR subprojects. The PIMAR results would probably not be replicated elsewhere in the region.

Recommendation: USAID should try and carry out its obligations as per the Project Agreements with the participating governments or regional organizations.

6. Vessel availability: (Tonga, Tuvalu)

The PIMAR design left the provision of vessels needed for project activities to the host countries. The arrangement provided a year of delays in the project schedules.

Lessons: It would have been better to provide funds in the contracts (Tonga, Tuvalu) for the contractors (RDA International, Inc.) to charter suitable vessels and hire commercial crews. This would have saved time, money and frustration

Recommendation: USAID pay particular attention to vessel provision in future fisheries projects requiring vessels.

7. Government Facilities (Tonga, Tuvalu, PNG Projects)

Government facilities, including vessels, cold storage, are often poorly maintained. This issue was overlooked under the above PIMAR subprojects.

Recommendation: The project should provide budget allocation to provide the supports required, such as hands-on maintenance engineers and spare parts.

8. Host-Government Counterparts

A number of social problems occurred during project implementation. The contractor's Chief-of-Party (COP) very

often cannot keep the government agencies fully informed of progress of project, as well as the problems being faced by the COP.

Recommendation: A Co-Manager counterpart should be designated to provide the missing linkage, and to fully inform the government agencies of project progress and problems. The arrangement should be part of the Project Agreement between the parties.

9. Review of Construction designs by USAID Engineers (Fiji and Cook Islands Projects).

The plans for construction work must be reviewed by USAID Engineers to avoid delays and also to save funds.

VIII. ANNEXES

A. List of Participating Countries:

1. Cook Islands
2. Fiji
3. Kiribati
4. Papua New Guinea (PNG)
5. Tonga
6. Tuvalu
7. South Pacific Commission (SPC)
- A regional organization

B. List of Contractors and Pre-Approved Contracts

1. BioSystems Analysis, Inc.
303 Potrero Street
Suite 29-203
Santa Cruz, CA 94920
Phone No: (408) 425-8755
Fax No: (408) 425-0928
 - Kiribati
Tarawa Lagoon Project
2. RDA International, Inc.
801 Morey Drive
Placerville, CA 95667-4411
Phone No: (916) 622-8800
Fax No: (916) 626-7391
 - 1. Cook Islands Black Pearl Project
 - 2. Tonga Small-scale Tuna Longlining Project
 - 3. Tuvalu Bottomfish Fishing Project
3. Foundation for the Peoples of the South Pacific
(FSP/Fiji)
8 Denison Road
P.O. Box 14447
Suva, Fiji
Phone No: (679) 300-392 or 314-160
Fax No: (679) 304-315
 - Fiji Lami Jetty Project
4. Foundation for the Peoples of the South Pacific
(FSP/PNG)
P.O. Box 1119
Boroko N.C.D.
Papua New Guinea
Phone: (675) 25-8470
Fax No: (675) 25-2670
 - PNG Phase 2 : Support for the Fishing Industry
Association (FIA) Project
5. South Pacific Commission (SPC)
P.O. Box D5
Noumea Cedex
New Caledonia
Phone No: (687) 26 2000
Fax No: (687) 26 3818
 - Regional Impact Component & SPC TBAP

C. List of Completed Subprojects:

1. Cook Islands Black-Lip Oyster Culture
2. Fiji Lami Jetty Extension
3. Kiribati Atoll Marine Resources and Environmental Management
4. PNG : (1) Pilot Tuna Longlining; and
(2) Support for Fishing Industry Association (FIA)
5. Tonga Tuna Longlining
6. Tuvalu Bottomfish Fishing
7. SPC Regional Impact Component (RIC) and Billfish Assessment Programme (TBAP).