



# Completion Report

---

Project Number: 26616  
Loan Numbers: 1562/1563  
November 2007

## Philippines: Fisheries Resource Management Project

Asian Development Bank

## CURRENCY EQUIVALENTS

Currency Unit	–	peso (P)		
			<b>At Appraisal</b>	<b>At Project Completion</b>
			(7 September 1999)	(31 December 2005)
P1.00	=	\$0.0307		\$0.01949
\$1.00	=	P28.487		P51.31

## ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
BAS	–	Bureau of Agricultural Statistics
BFAR	–	Bureau of Fisheries and Aquatic Resources
BFMC	–	Bay Fisheries Management Centers
BMC	–	Bay Management Council
CRM	–	coastal resource management
CO	–	community organizer
EIRR	–	economic internal rate of return
FARMC	–	fisheries and aquatic resources management council
FIRR	–	financial internal rate of return
FSP	–	Fisheries Sector Program
GIS	–	geographic information system
IEC	–	information education campaign
JBIC	–	Japan Bank for International Cooperation
MARINA	–	Maritime Industry Authority
MCS	–	monitoring, control, and surveillance
NEDA	–	National Economic Development Authority
NGO	–	nongovernment organization
NPO	–	nonprofit organization
NPV	–	net present value
NSCB	–	National Statistical Coordination Board
OCR	–	ordinary capital resources
PCR	–	project completion review
PhilFIS	–	Philippine Fisheries Information System
PMO	–	project management office
PPER	–	project performance evaluation review
REP	–	resource enhancement project
RRP	–	report and recommendation of the President
RSA	–	resource and social assessment
SER	–	shadow exchange rate
SI	–	sensitivity indicator

## GLOSSARY

*barangay* – The lowest local government administrative unit

## NOTE

In this report, "\$" refers to US dollars.

<b>Vice President</b>	C. Lawrence Greenwood, Jr., Operations Group 2
<b>Director General</b>	A. Thapan, Southeast Asia Department (SERD)
<b>Director</b>	U. S. Malik, Agriculture, Environment and Natural Resources Division, SERD
<b>Team leader</b>	M. Nasimul Islam, Environmental Engineer, SERD
<b>Team member</b>	N. Calma, Associate Project Analyst, SERD



## CONTENTS

	<b>Page</b>
BASIC DATA	i
MAP	
I. PROJECT DESCRIPTION	1
II. EVALUATION OF DESIGN AND IMPLEMENTATION	1
A. Relevance of Design and Formulation	1
B. Project Outputs	2
C. Project Costs	4
D. Disbursements	5
E. Project Schedule	5
F. Implementation Arrangements	6
G. Conditions and Covenants	6
H. Consultant Recruitment and Procurement	7
I. Performance of Consultants, Contractors and Suppliers	8
J. Performance of the Borrower and the Executing Agency	8
K. Performance of the Asian Development Bank	9
III. EVALUATION OF PERFORMANCE	9
A. Relevance	9
B. Effectiveness in Achieving Outcome	10
C. Efficiency in Achieving Outcome and Outputs	10
D. Preliminary Assessment of Sustainability	11
E. Impact	12
IV. OVERALL ASSESSMENT AND RECOMMENDATIONS	14
A. Overall Assessment	14
B. Lessons	14
C. Recommendations	15
APPENDIXES	
1. Project Framework	17
2. Number of Apprehensions for Illegal Fishing Made by LGUs and Amount of Fines Collected Before and During/After FRMP	34
3. Implemented Livelihood Projects by Type	35
4. Project Cost	37
5. Project Implementation Schedule	43
6. Project Organization Charts	52
7. Status of Compliance with Major Loan Covenants	54
8. Person-Months of Specialists Provided by the Project Management Consulting Team	58
9. Procured Equipment under ADB Loan	59
10. Income Data from Capture Fishing in Selected FRMP Sites	62
11. Economic and Financial Analyses	64
12. Environmental Impact of FRMP Activities	91



## BASIC DATA

### A. Loan Identification

1.	Country	Philippines
2.	Loan Numbers	1562/1563
3.	Project Title	Fisheries Resource Management Project
4.	Borrower	Government of the Philippines
5.	Executing Agency	Department of Agriculture
6.	Amounts of Loans	SDR11,022,000 (ADF) \$20,222,000 (OCR)
7.	Project Completion Report Number	PCR: PHI 1004

### B. Loan Data

1.	Appraisal	
	– Date Started	5 March 1997
	– Date Completed	29 March 1997
2.	Loan Negotiations	
	– Date Started	17 September 1997
	– Date Completed	18 September 1997
3.	Date of Board Approval	16 October 1997
4.	Date of Loan Agreement	21 January 1998
5.	Date of Loan Effectiveness	
	– In Loan Agreement	21 April 1998
	– Actual	07 September 1998
	– Number of Extensions	3
6.	Closing Date	
	– In Loan Agreement	30 June 2004
	– Actual	13 November 2006 (ADF) 20 November 2006 (OCR)
	– Number of Extensions	1
7.	Terms of Loan	
	– Service Charge	1.0 % for ADF
	– Commitment Charge	0.75 % for OCR
	– Interest Rate	Pool-based variable rate and Libor-based (Floating) for OCR
	– Maturity (number of years)	35 years (ADF); 25 years (OCR)
	– Grace Period (number of years)	10 years (ADF); 5 years (OCR)

#### 8. Disbursements

a.	Dates		
		<b>Initial Disbursement</b>	<b>Final Disbursement</b>
		<b>Time Interval</b>	
ADF		20 January 1999	13 November 2006
OCR		20 January 1999	20 November 2006
			94 months
			94 months

---

Effective Date	Original Closing Date	Time Interval
21 April 1998	30 June 2004	74 months

(i) b. Amount ('000)  
1562 (ADF) (SDR'000)

Category	Original Allocation	Last Revised Allocation	Amount Cancelled <sup>a</sup>	Amount Disbursed	Undisbursed Balance <sup>b</sup>
Vehicles	164	121	43	30	91
Training	1,940	2,410	(470)	1,733	677
Consulting Services	7,540	8,197	(657)	7,229	968
Service Charge	294	294		223	71
Unallocated	1,084	0	1,084	0	0
<b>Total</b>	<b>11,022</b>	<b>11,022</b>	<b>0</b>	<b>9,214</b>	<b>1,807</b>

<sup>a</sup> Net effect of final reallocation made on 07 December 2004.

<sup>b</sup> The undisbursed loan balance of SDR1.807 million was canceled on 13 November 2006.

(\$'000)

Category	Original Allocation	Last Revised Allocation	Amount Cancelled <sup>a</sup>	Amount Disbursed	Undisbursed Balance <sup>b</sup>
Vehicles	223	186	66	41	135
Training	2,640	3,701	(721)	2,437	1,005
Consulting Services	10,262	12,590	(1,009)	10,074	1,438
Service Charge	400	451		318	105
Unallocated	1,475	0	1,664	0	0
<b>Total</b>	<b>15,000</b>	<b>16,928</b>	<b>0</b>	<b>12,870</b>	<b>2,684</b>

<sup>a</sup> Net effect (\$ equivalent) of final reallocation made on 7 December 2004.

<sup>b</sup> The undisbursed loan balance of \$2.684 million equivalent was canceled on 13 November 2006.

(ii) Loan 1563 (OCR) (\$'000)

Category	Original Allocation	Last Revised Allocation	Amount Cancelled <sup>a</sup>	Amount Disbursed	Undisbursed Balance <sup>b</sup>
Equipment	1,786	660	1,126	602	58
Training and Workshops in CRM	1,161	772	389	757	15
Training and Workshops in microenterprise management and mariculture	2,832	2,380	452	2,390	(10)
Materials	8,251	950	7,301	879	71
Consulting Services	1,178	1,700	(522)	1,609	91
Interest During Construction	3,305	2,310	995	1,970	340
Unallocated	1,709	0	1,709	0	0
<b>Total</b>	<b>20,222</b>	<b>8,772</b>	<b>11,450</b>	<b>8,207</b>	<b>565</b>

<sup>a</sup> A total of \$11.450 million was canceled on 17 April 2000 (\$3.0 million), 8 May 2003 (\$5.0 million), and 7 December 2004 (\$3.45 million), resulting in a final loan allocation of \$8.772 million.

<sup>b</sup> The undisbursed loan balance of \$0.565 million was canceled on 20 November 2006.

9.	Local Costs (Financed)	
	- Amount (\$)	21,149
	- % of Local Costs	53
	- % of Total Cost	39

### C. Project Data

#### 1. Project Cost (\$'000)

Cost	Appraisal Estimate	Actual
Foreign Exchange Cost	16,526	14,583
Local Currency Cost	72,633	40,014
<b>Total</b>	<b>89,159</b>	<b>54,597</b>

#### 2. Financing Plan (\$'000)

Cost	Appraisal Estimate	Actual
Implementation Costs		
Borrower Financed	34,662	20,929
ADB Financed	31,516	18,789
Other External Financing	19,275	12,591
<b>Total</b>	<b>85,453</b>	<b>52,309</b>
IDC Costs		
Borrower Financed		
ADB Financed	3,706	2,288
Other External Financing		
<b>Total</b>	<b>3,706</b>	<b>2,288</b>

#### 3. Cost Breakdown by Project Component (\$'000)

Component	Appraisal Estimate	Actual
A. Fisheries Resources Management		
1. Fisheries Information System	647	780
2. CRM Planning and Implementation	21,866	11,782
3. Integrated CRM in Puerto Princesa	2,565	1,540
4. Fisheries Legislation and Regulations	2,277	2,659
5. Community-Based Law Enforcement	11,651	11,209
6. MCS Centers	4,885	2,436
Subtotal	43,891	30,406
B. Income Diversification		
1. Community Organizing	6,894	6,555
2. Promotion of Microenterprises	4,911	1,254
3. Support for Mariculture Development	3,700	2,949
Subtotal	15,505	10,758
C. Capacity Building		
1. Strengthening of Institutions	3,788	1,758
2. Project Management	8,772	9,387
Subtotal	12,560	11,145
Total Baseline Costs	71,956	52,309
Physical Contingencies	7,266	0
Price Contingencies	5,528	0
<b>Total Project Costs</b>	<b>84,750</b>	<b>52,309</b>

Interest During Construction (OCR)	3,305	1,970
Interest During Construction (ADF)	401	318
<b>Total</b>	<b>88,456</b>	<b>54,597</b>

## 4. Project Schedule

Item	Appraisal Estimate	Actual
Date of Consultancy Contracts		
Project Management Consultant	First Quarter 1998	
Original		12 May 1999
Supplementary		25 November 2002
IEC Consultant	First Quarter 1998	
Original		21 January 2000
Extension		10 October 2003
RSAs and Post RSAs (17 Contracts)		
First Contract	Second Quarter 1998	18 January 2000
Last Contract		16 March 2005
Community Organizing (84 Contracts)		
First Contract	First Quarter 1998	2 December 1999
Last Contract		29 April 2005
Equipment and Supplies		
Dates		
First Procurement		19 November 2001
Last Procurement		22 March 2004
Other Milestones		
First Cancellation (OCR)		17 April 2000
Second Cancellation (OCR)		08 May 2003
Third Cancellation (OCR)		07 December 2004
Final Cancellation (OCR)		20 November 2006
Final Cancellation (ADF)		13 November 2006

## 5. Project Performance Report Ratings

Implementation Period	Ratings	
	Development Objectives	Implementation Progress
From 07 September to 31 December 1998	S	S
From 01 January to 31 December 1999	S	S
From 01 January to 31 December 2000	S	S
From 01 January to 28 February 2001	S	HS
From 01 March to 31 December 2001	S	S
From 01 January to 31 December 2002	S	S
From 01 January to 31 December 2003	S	S
From 01 January to 31 December 2004	S	S
From 01 January to 31 December 2005	S	S
From 01 January to 31 December 2006	S	S

ADB = Asian Development Bank, ADF = Asian Development Fund, CRM = coastal resource management, IDC = interest during construction, IEC = information education campaign, MCS = monitoring, control and surveillance, OCR = ordinary capital resources, RSA = resource and social assessment.

#### D. Data on Asian Development Bank Missions

Name of Mission	Date	Number of Persons	Number of Person-Days	Specialization of Members <sup>a</sup>
Fact Finding	11–29 November 1996	6	78	a(2),b,c,d,e
Appraisal	5–29 March 1997	9	124	a(2),c,e,f,g,h,i,j
Project Inception	10–27 August 1998	2	24	b,k
Project Review Mission 1	21 June–1 July 1999	2	13	b,k
Project Review Mission 2	6–17 December 1999	1	11	B
Project Review Mission 3	19 September–4 October 2000	3	30	k,l,m
Midterm Review	13 September–5 October 2001	3	51	b,k,n
Project Review Mission 4	16–27 September 2002	3	26	o,k,p
Project Review Mission 5	9–18 September 2003	2	26	o,k
Project Review Mission 6	25 November–13 December 2004	2	18	o,k
Project Review Mission 7	16–24 August 2005	2	17	o,q
Project Completion Review <sup>b</sup>	13 April–15 May 2007	4	56	q,r,s,t

<sup>a</sup> a - project economist, b - project specialist (fisheries), c - program officer, d - consultant (fisheries resource management), e - consultant (microenterprise development specialist), f - strategy officer, g - counsel, h - consultant (institutional specialist), I - OECF representative, j - manager, k - assistant project analyst, l - project specialist, m - young professional, n - consultant (resource economist), o - agriculture and natural resource management specialist, p - director, q - associate project analyst, r - environmental engineer, s - consultant economist/financial specialist, t - consultant (social development/poverty specialist).

<sup>b</sup> The project completion report was prepared by Mohammed Nasimul Islam, environmental engineer, Nida Calma, associate project analyst, Corazon Aragon, consultant (economist/financial specialist), and Ma. Linnea Tanchuling, consultant (social development/poverty specialist).







## I. PROJECT DESCRIPTION

1. On 14 October 1997, the Asian Development Bank (ADB) approved two loans amounting to \$20.2 million from its Ordinary Capital Resources (OCR) and SDR\$11 million (\$15 million equivalent) from its Asian Development Fund (ADF) to support the Fisheries Resource Management Project in the Philippines. The main objectives of the Project were to (i) promote conservation and sustainable management of coastal fisheries by reversing the trend of resource depletion in municipal waters, and (ii) alleviate the extensive poverty of coastal fishing communities by promoting income diversification to reduce their reliance on fishing and increase their income and living standards. It was designed to follow on from and incorporate the lessons of the Fisheries Sector Program to support the efforts of the Government to address the critical and interconnected issues of fisheries resource depletion and persistent poverty among municipal fishing communities.

2. The project focused on the near-shore or municipal fisheries subsector and covered 100 municipalities in 18 bays and gulfs, among 26 priority bays in the Philippines.<sup>1</sup> The Project had three components, as follows.

- (i) Fisheries resource management, focusing on fisheries data management, coastal resource management (CRM), planning and implementation, fisheries legislation and regulations, community-based law enforcement, and regional coordination.
- (ii) Income diversification, including community organizing, promotion of microenterprises, and support for mariculture development.
- (iii) Capacity building for public agencies in charge of fisheries management at the national, regional and local levels, with a focus on local government units.

## II. EVALUATION OF DESIGN AND IMPLEMENTATION

### A. Relevance of Design and Formulation

3. The Project's objectives and implementation strategies were consistent with the country strategy of ADB, which focuses on reducing poverty and promoting social equity, supporting human development, protecting the environment, and harnessing private sector initiatives for the development of other productive sectors. When the Project was prepared and appraised, it was in line with the objective of the Government's 1993–1998 Medium-Term Fisheries Management and Development Plan to enhance productivity of fisheries resources in the Philippines on a sustainable basis.

4. The Project's strategy of strengthening the capability of local government units on municipal fisheries resource management was in accordance with the Local Government Code of 1991, which aims to empower the units (for example, cities and municipalities) to exercise exclusive jurisdiction over their waters in coastal and natural resource management activities.

5. The Project design was sound because the components complemented and supported one another. The formulation process was adequate because the design focused on using a

---

<sup>1</sup> The Project covered 18 bays. This includes 11 bays under the Fisheries Sector Program (Calauag, Carigara, Lagonoy, Ormoc, Panguil, Ragay, San Miguel, San Pedro, Sogod, Sorsogon, and Tayabas) and seven new bays (Butuan Bay, Davao Gulf, Gingoog Bay, Honda Bay, Lingayen Gulf, Puerto Princesa, and Sapián Bay).

participatory process and methods such as stakeholders' consultation, focus group discussions, and resource and social assessment surveys in planning and implementation for coastal resource management. The Project was relevant at appraisal and completion because it had the same objectives as the Government.

6. Changes were made to the Project design during implementation to enhance the Project's relevance: (i) the Bureau of Fisheries and Aquatic Resources (BFAR) provided initial working capital to selected fishing organizations to start mariculture projects, and (ii) several output indicators were changed from bay-wide to the local government level. The performance indicator in the logical framework regarding the decrease in the number of municipal boats three years after project completion (2008) was not realistic because it is expected that fish production will increase over time as a result of the Project.

## **B. Project Outputs**

7. A project framework comparing the target outputs at the time of appraisal with actual achievement is shown in Appendix 1.

### **1. Fisheries Resource Management Component**

8. The Philippine Fisheries Information System (PhilFIS), a computerized fisheries database system, was designed to facilitate the vertical and horizontal flow of data and information among agencies involved in fisheries management and other entities such as local government units for planning and management, decision-making and resource management. Despite some delays, the Project fully met its target of installing the system in all 100 local government units covered by the Project and conducting training for BFAR and local government personnel on the system's operation. However, the delay in developing PhilFIS affected implementation of registration of municipal fishers and licensing activities for municipal and commercial fisheries. PhilFIS included development of the Fisherfolk Registration Database, the Municipal Fisheries Licensing Database and the Commercial Fisheries Licensing Database. PhilFIS currently is not fully functional in some participating local government units in Regions 5, 6, 8, 10, 11 and 12 due to the following problems: (i) resignation of local government personnel or non-renewal of contractual personnel who were trained in the system's operation, and (ii) poor maintenance of computer systems for data management. Hence, the databases in these local government units could not be linked via the internet with the Fisheries Information Management Center at the BFAR central office. This hampered preparation and updating of fisheries management plans in the affected regions.

9. Since the Fisherfolk Registration Database was installed in 2005, at least 21 local government units have been using the registration system as the basis for implementing the municipal fisheries licensing system. The Project fully met the target set at appraisal of installing the licensing system in 100 local government units. At least 14 units in regions 1, 4A, 5, 8, 9, 10, 11, 12 and 13 have started to issue licenses and charge license fees based on the licensing system and municipal fisheries ordinances. In addition, 93% of the 100 local government units have enacted or updated their ordinances to provide legal backing to the licensing system. The exceptions are Puerto Princesa City and six units in Region 11 (Davao Gulf), where public and committee hearings of ordinances are continuing.

10. Of the 100 municipalities, 98% drafted coastal resource management plans through stakeholder participation at the end of the Project. Of these, about 89% had their plans approved by their municipal councils and have integrated the plans into their municipal

development plans. In addition, the Project included a pilot test of integrated coastal resource management planning in coastal areas, with environmental protection in upland areas in Puerto Princesa City, Palawan. The Project also established 185 resource enhancement projects (REPs) comprising fish sanctuaries, fishery reserves, and mangrove rehabilitation to improve the habitat of fish, surpassing the target of 101 REPs.

11. In coordination with local government units, BFAR fully met its target of establishing community-based fisheries law enforcement teams in 100 municipalities to curb illegal fishing. Of a target of 1,059 coast watch teams, 93.2% were organized. During implementation, a gradual increase in the number of arrests and the amount of fines collected by local government units for illegal fishing shows the increasing effectiveness of community-based law enforcement initiatives (see Appendix 2).

12. BFAR met the target of establishing four monitoring, control and surveillance centers for regional coordination in data management, legislation and surveillance in municipal waters. However, the centers are only partially functional due to the delay in developing the PhilFIS database and communication system.

## **2. Income Diversification Component**

13. This component was envisaged to provide municipal fisherfolk with supplementary income and to reduce their reliance on fishing in the short term. The aim was to encourage the gradual exit of marginal fishers from capture fisheries. A total of P13.11 million in savings was generated by more than 100 fishing groups with a total membership of 27,203. The savings of P482 per member fell short of the P2,000 target, mainly because implementation of the component was delayed by a break in the engagement of nongovernment organizations (NGOs) responsible for community organizing work. However, this component built momentum toward the end of the Project and is being sustained by BFAR, local government units and local NGOs.

14. The total number of microenterprises established by community groups was 51 in 2001, increasing to 537 in 2005, benefiting 13,104 fisherfolk (see Appendix 3). The marked increase in microenterprises was due to local government investments in community groups organized and strengthened by the Project, as well as loans extended by NGOs. The Project exceeded the target of encouraging 8,000 of the 20,000 organized fisherfolk to engage in microenterprises. At loan closing in 2005, only 442 microenterprises were operating. In early 2006, about 587 microenterprises were operating, falling to 488 at the end of the year. The decrease was due to business failures caused by (i) external factors such as typhoon damage in Regions 4A, 5 and 8; (ii) marketing problems in Region 8; (iii) the high mortality rate of fingerlings; (iv) financial mismanagement (Region 1), and (v) the occurrence of ice-ice disease in seaweed (Regions 8 and 10). It is premature to say whether or not the microenterprise projects have made income contributions sufficient for marginal fisherfolk to exit from fishing gradually, thereby reducing pressure on coastal and fisheries resources. Most of the livelihood projects are in their infancy stage, small-scale in nature and have limited working capital.

15. The target of establishing and transferring 21 mariculture schemes to fisherfolk organizations was only partially met as there were not enough sites suitable for mariculture parks. Only 11 mariculture schemes were established, five of which were transferred to fisherfolk organizations. The Project introduced seaweed production in 33 local government units, surpassing its target of expanding seaweed production in about 15 sites.

### 3. Capacity Building Component

16. Project implementation training was conducted for BFAR staff at regional project implementation units and central offices and for local government staff at provincial and municipal levels. The Project also offered 120 short-term scholarships and trainings (including eight Masters of Science scholarships, four overseas short-term trainings, 19 domestic coastal resource management trainings and 18 domestic short-term management trainings), which enhanced the technical skills of implementation staff at different levels of government. Fisher leaders and members of fisheries and aquatic resources management councils (FARMCs) were also trained through the NGOs on leadership, cooperative management and bookkeeping.

17. The project design envisioned that BFAR would strengthen bay management councils (BMCs) in areas covered by the earlier Fisheries Sector Program, as well as in new areas. However, capacity building activities for the councils were limited due to (i) more priority accorded by BFAR to fisheries resource management activities in individual local government units, and (ii) BFAR's emphasis as the Project began to be implemented in 1998 on forming integrated FARMCs instead of BMCs, in accordance with the Fisheries Code of 1998. Although both types of council aim to coordinate on bay-wide resource management issues, the stakeholders are different. The principal stakeholders in BMCs are local mayors, while the principal stakeholders in integrated FARMCs are municipal fisherfolk. The BMC concept was introduced during the Fisheries Sector Program.

18. The target of continuing to operate five laboratories to conduct cyanide detection tests in three major international airports (Manila, Cebu and Davao) and in two major live fish production areas (Puerto Princesa and Coron, Palawan) was met. BFAR has adopted tests for all live exports. However, the laboratories need more equipment to enhance their monitoring and surveillance of toxic substances.

#### C. Project Costs

19. Project expenditures at completion totaled \$54.597 million, considerably less than the \$89.159 million estimated at appraisal (Basic Data C.1). The lower cost was mainly attributed to a devaluation of the Philippine currency relative to the US dollar.<sup>2</sup>

20. ADB approved two requests for reallocation of loan proceeds among the Project's components and expenditure categories of the Asian Development Fund (ADF) and ordinary capital resources (OCR) loans. Major changes in the ADF loan were (i) a reduction in the cost of training on the information education campaign (IEC), (ii) an increase in RSA consulting services to accommodate continuous monitoring of fisheries data and to conduct of a comparative study of RSAs across different sites, and (iii) an increase in the cost of community organizing due to the increased cost of NGO contracts. At project appraisal, the budget estimate for community organizing was P100,000 per barangay (the lowest local government administrative unit). However, the actual average contract value was P200,000 per barangay because more local government units were covered. Major amendments to the OCR loan were (i) a reduction in IEC equipment and materials to cover for the increase in IEC workshops (ii) an increase in coastal resource management training to cover the second and third years of NGO contracts, (iii) a reduction in materials for coastal resource management planning and

---

<sup>2</sup> The total project cost excluding interest during construction is P2.68 billion at completion, compared with P2.41 billion at appraisal.

implementation, and (iv) an increase in the consulting services budget to extend the services of the BME specialist and regional advisers. The reallocation under the OCR and the ADF loans was not related to a change in scope or implementation arrangements. It did not result in an increase in the overall ceiling for local currency. Appendix 4 presents the summary of the project cost.

#### **D. Disbursements**

21. A separate imprest account for each loan (OCR and ADF) was established to help expedite disbursements for the Project and to reduce BFAR's cash-flow difficulties in pre-financing project expenditures. The appraisal disbursement schedule was not followed due to low loan utilization and disbursement rates, as evident from the average annual turnover ratios of 1.49 and 1.10 for the ADF and OCR accounts, which are less than 2.0 during the 1999 to 2006 period. Of the total loan allocation amounting to \$35.22 million at appraisal, only 60% or \$21.077 million was disbursed. The balance of \$12.02 million for Loan 1563 was cancelled in four tranches: \$3 million on 17 April 2000, \$5 million on 8 May 2003, \$3.45 million on 7 December 2004, and \$0.57 million on 20 November 2006. The balance of \$2.68 million (SDR1.81) for Loan 1562(SF) was cancelled on 13 November 2006. Utilization and disbursement rates were initially low due to (i) slow project implementation, especially at the beginning (for example, NGOs were engaged slowly for community organizing, which then delayed the implementation of livelihood and mariculture development activities); (ii) the reduced need for loan proceeds because of savings resulting from a devalued peso, which resulted in OCR loan cancellations; and (iii) bookkeeping difficulties encountered by BFAR regional offices, caused partly by a lack of accounting personnel and an appropriate financial management system to facilitate financial reporting and liquidation of disbursements. The latter problem was resolved when the Project hired short-term financial management and computer specialists to strengthen the financial management units at the BFAR regional offices and to upgrade the financial management and reporting systems of the Project. The major disbursements were for training (19% for ADF loan and 50% for OCR loan) and consulting services (78% for ADF loan and 26% for OCR loan).

#### **E. Project Schedule**

22. The Project officially began when the ADB loans became effective on 7 September 1998, but implementation began in January 1999. ADB approved the Government's request for an 18-month extension of the Project to allow BFAR to complete the remaining project activities, including (i) installation and operation of PhilFIS, (ii) four resource and social assessments, (iii) approval of coastal resource management plans, (iv) establishment of resource enhancement projects, (v) expansion of microenterprises and mariculture projects, (vi) adoption of municipal fisheries ordinances, (vii) installation of municipal fishing licenses, (viii) procurement of patrol boats, and (ix) establishment of fisheries law enforcement teams and coastal watch teams. Factors that contributed to an extended implementation period included (i) limited availability of qualified NGOs, (ii) lengthy and centralized procedures in government entities and the executing agency for procurement of services and equipment, (iii) government austerity measures, (iv) lack of technical personnel in BFAR, and (v) intensive training, which was needed to establish financially viable and sustainable livelihood projects. Appendix 5 shows the project implementation schedule at project appraisal compared with the actual schedule.

## **F. Implementation Arrangements**

23. In the original project design, the Department of Agriculture was the executing agency. The implementing agencies were BFAR through the project management office (PMO) and the relevant regional offices of the Department of Agriculture, with responsibility for day-to-day implementation at the national and regional levels. However, with the passage of the Republic Act 8550, otherwise known as the Fisheries Code of 1998, day-to-day project implementation at the field level was instead assumed by BFAR's regional offices. The change was initiated through project implementing units in coordination with local government fisheries management units from loan effectiveness on 7 September 1998. Overall, the PMO implemented its functions satisfactorily and the activities were mostly accomplished despite some delays. Most of the target outputs were achieved, as shown in the Project Framework in Appendix 1. Appendix 6 shows the current project organizational chart compared with the organizational structure envisaged at the time of appraisal.

24. BFAR established a project steering committee and coordinated at the national and local levels with other government agencies implementing projects related to coastal resource management (for example, the Department of Environment and Natural Resources and the Department of Finance). It also coordinated with the United States Agency for International Development in its Coastal Resource Management Project, especially in areas of IEC and coastal resource management training. The mission noted strong coordination between BFAR and local government units to implement project activities in most of the project areas. An exception was Puerto Princesa, Palawan, where coordination between the local government unit and BFAR-Region 4B, in metro Manila, was weak. In general, implementation arrangements between BFAR and the local government units were adequate to deliver project outputs and in line with the organizational structure that complied with the existing regulation.

## **G. Conditions and Covenants**

25. The conditions and covenants stipulated for the Project were realistic and relevant. The Government's compliance with the loan covenants was satisfactory. However, the executing agency's compliance on a moratorium on issuing licenses for new vessels of less than 250 gross tons was delayed; the conduct of baseline survey studies was not fully implemented based on the time frames indicated during appraisal; and gender training was conducted only for PMO staff rather than all staff at different levels of project implementation. Appendix 7 shows the status of compliance with the loan covenants.

26. The executing agency should have implemented a new commercial fishing licensing system by 30 June 1998 and issued a moratorium on issuing licenses for fishing vessels of less than 250 gross tons by 31 October 1998. The system was not implemented until 30 October 2005. The delay meant that commercial fishing vessels continued encroaching on municipal fishing grounds as can be seen by the number of arrests by local government units (Padre Burgos, Quezon; Mercedes, Camarines Norte; and Malitbog, Southern Leyte). See Appendix 2.

27. Baseline surveys should have been conducted in the first, fourth and final years of the Project's implementation. However, only initial resource and social assessments were conducted in all the project sites. Follow-up assessments to generate time series data for impact analysis were not done. Instead of bay-wide assessments, focus group discussions were conducted in representative coastal villages and municipalities. This methodology was effective in soliciting the participation of fishers and community members. However, it posed limitations for the project completion review (PCR) in analyzing the extent of economic and poverty

impacts at the level of household income because no household level data was gathered in the follow-up resource and social assessments. It is recommended that during the Operations Evaluation Department's program performance audit report, an impact evaluation study involving household surveys be conducted at the project sites.

28. The executing agency should have conducted gender training for project staff at all levels to promote the role of the women in project implementation, but such training was conducted only at the PMO level. The executing agency did not assign a focal point person for gender issues to the PMO, resulting in a lack of gender indicators in the Project's monitoring system, weak collection of gender disaggregated data and an absence of special women's studies conducted for the Project. Gender education and training at the level of the community and people's organizations was assigned to NGOs contracted for project implementation. Not all of the NGOs had experience in organizational orientation and advocacy in relation to gender, development and resource management. Hence, they did not regard the integration of gender concerns in project activities as a priority. It is recommended that the executing agency strengthen its gender desk to exert significant influence in gender mainstreaming for all its activities.

#### **H. Consultant Recruitment and Procurement**

29. The executing agency engaged domestic consultants in accordance with ADB's *Guidelines on the Use of Consultants* (as amended from time to time). They included (i) a project management consultant firm to assist the PMO and the project implementing units in managing the Project and strengthening the executing agency's capacity in fisheries resource management; (ii) an IEC consultant to produce materials, undertake special events and conduct capacity building activities to enable project implementers and beneficiaries to conduct an IEC campaign independently; (iii) resource and social assessment contractors, mostly academic institutions, to conduct resource assessment and socioeconomic baseline studies; and (iv) NGOs to facilitate community organizing and social preparation work for resource management, law enforcement and microenterprise and livelihood development. Appendix 8 shows the staffing schedule of the project management consultant.

30. Overall, the contracting and mobilization of all the consultants were delayed. Based on the appraisal, the hiring of a project management consultant was to be done in the first quarter of 1998, but the consultant was not mobilized until the second quarter of 1999. The IEC consultant and resource and social assessment contractors should have been hired by the first and second quarters of 1998, but the contracts did not take effect until January 2000. The original IEC contract was for three years, but it was renewed for another year from 10 October 2003 to 9 October 2004. When the contract expired, the executing agency engaged the Philippine Information Agency for six months to fulfill the remaining targets. Since it is a government agency, its services were procured through direct negotiations and not through public bidding, which hastened the contracting process and implementation. Working arrangements with the agency were covered under a memorandum of agreement between PIA and the Department of Agriculture and BFAR.

31. In line with the appraisal, 126 NGO contracts should have been awarded (42 contracts a year, phased over three years, for 42 community clusters) from the first quarter of 1998. By the fourth quarter of 2002, four years after loan effectiveness, 31 contracts had been awarded in the first year, six in the second year, and none in the third year. Factors contributing to slow execution of contracts were (i) the late engagement of the project management consultant, (ii) a lack of available NGOs with adequate experience in coastal resource management, and (iii) a

slow contracting process due to the centralization of signatory authorities at the Department of Agriculture's central office. Only 84 contracts had been awarded at the time of project completion.

32. The executing agency's procurement of all equipment for the Project was in accordance with the procedures set out in the Loan Agreement, namely the use of local competitive bidding. The total cost for the equipment was P30.855 million from 2000 to 2004 (see Appendix 9). Most procurements took more than 200 days from the preparation of the request to delivery. The most lengthy part of the procurement process was usually the period between the issuance of an invitation to bid and the opening of bids.

#### **I. Performance of Consultants, Contractors and Suppliers**

33. The performance of the project management consultants as a team and as individual specialists was satisfactory. Aside from providing technical assistance, the team assisted in the day-to-day implementation of the Project to compensate for the limited number of permanent personnel at the PMO and the implementation units. The fulfillment of the responsibilities of the IEC consultant was also satisfactory in the areas of organizing special events, training, press relations and media exposure. Likewise, the performance of the resource and social assessment contractors was satisfactory. Most of the research institutions contracted to conduct the assessments were the designated regional and coordinating centers of the Philippine Council for Aquatic and Marine Research and Development, which are the lead institutions of the National Fisheries Research Network under the Agriculture and Fisheries Modernization Act. As such, they had been evaluated by the Department of Science and Technology before involvement in the Project.

34. The NGOs achieved the objectives of organizing fisher organizations. The process included social preparation and participatory planning for coastal resource management, community-based law enforcement and livelihood and microenterprise development. The NGOs' performance in terms of fulfilling responsibilities ranged from acceptable to satisfactory. When the contracts ended, the growth and development of the fisher organizations and the projects they established varied. This was due to uneven interventions by the NGOs, mainly because of delays in contracting. In hindsight, it would have been better to (i) shorten the NGO selection process, and (ii) assess experience in community organizing, community-based resource management and microenterprise development as the primary selection criteria, rather than basing selection on the lowest bid.

#### **J. Performance of the Borrower and the Executing Agency**

35. The overall performance of the executing agency was satisfactory in attaining most of the physical targets, as evidenced by the project performance ratings given during the review missions. An institutional assessment by the project management office at the start of implementation revealed that the "absorptive capacity" and "readiness" of the executing agency and the local government units were seriously deficient to effect the changes expected under the Project. Thus, as part of institutional strengthening, a national-level training plan was designed and formalized. It became the basis for the Project's capacity building activities for executing agency personnel. Capacity building activities involved domestic and international scholarships, field visits, and technical and management training. Training of trainers was adopted to reach a bigger number of untrained personnel. Trained trainers, in turn, conducted courses at the field level for local government staff and fisher leaders.

36. At the start-up of the Project, the staff complement, especially at the level of the implementing units, was adequate. However, as implementation progressed, the volume of the work increased and there was a need for multi-tasking by the staff. Individual staff at the implementing units had to handle two or more assignments, which created difficulties in rationalizing available time for training and coaching field management units. To address the situation quickly, the project steering committee recommended to the executing agency during the midterm review to hire personnel on a temporary basis while also seeking to secure additional regular and tenured positions.

#### **K. Performance of the Asian Development Bank**

37. ADB monitored the Project closely, fielding a fact-finding mission, an appraisal mission, a project inception mission, seven review missions, a midterm review mission and a project completion review mission, involving 474 person-days of staff and consultant services. The review missions were useful in recommending to the executing agency time-bound actions to improve project implementation. Interviews with the project director and key PMO staff indicate that the executing agency did not encounter problems in following ADB guidelines and procedures. Moreover, the guidance and regular feedback of ADB staff helped the executing agency to make timely decisions regarding implementation and funds. Overall, based on the executing agency's assessment, ADB's performance in jointly administering the Project was satisfactory.

### **III. EVALUATION OF PERFORMANCE**

#### **A. Relevance**

38. The Project was relevant and highly supportive of the Government's efforts in poverty reduction and fisheries resource management. It was highly responsive to the needs of the sector during implementation. The Project started when the Fisheries Code of 1998 (RA 8550) was at its initial stages of implementation, and it complemented the code's implementation specifically in the area of conservation of the marine and aquatic resources of 18 bays, accounting for 75% of the priority bays in the country. The Project is relevant at completion because the Medium Term Philippine Development Plan 2004–2010 (Chapter 3) continues to emphasize protection of the country's coastal and marine ecosystems in cooperation with local government units, including planning, zoning, setting standards, establishing marine sanctuaries, and strengthening marine and coastal law enforcement activities.

39. The Project aimed to retard depletion of coastal resources caused primarily by the lack of awareness of coastal communities on the wise use of resources, weak enforcement of laws and policies, and the lack of alternative livelihoods. The activities under the Project's three components, namely, fisheries resource management, income diversification and capacity building, were geared to address these constraints. During the midterm review in 2001, no major changes were recommended in the project design. However, to hasten the accomplishment of project objectives, it was proposed that the executing agency should strengthen the activities to address several constraints with regard to (i) standardization of the organizational structures of the implementing units; (ii) completion of PhilFIS and commencement of the operation of the bay fisheries management centers; (iii) expansion of mariculture activities as an alternative livelihood option for project beneficiaries; and (iv) procurement and contracting procedures. The follow-up corrective activities to address these constraints helped to realign the Project to its original objectives.

## **B. Effectiveness in Achieving Outcome**

40. The Project was effective in meeting most of its objectives and outcomes. The overarching goals as stated in the report and recommendation of the President were to reduce the declining rate of municipal capture fisheries from 4.5% per annum to 1.9% per annum during the project period, and to 1.5% after project completion. The intention was to reduce the poverty incidence (as was estimated during appraisal at 80 to 95% in the new bays and 65% in the old bays) three years after project completion. Bureau of Agricultural Statistics (BAS) data on municipal fisheries from 1999 to 2005 showed that national production increased by an average of 6.8% per annum for municipal capture fisheries.<sup>3</sup> The project areas contribute to 75% of the total municipal fisheries of the 26 strategic and priority bays of the country. This shows that the Project, on a national scale, was effective in contributing to increases in municipal capture fisheries production by reducing the trend of municipal fisheries depletion through resource enhancement, reduction in harmful fishing practices, fisheries law enforcement and generating alternative livelihood activities.

41. The national poverty threshold in 1997, at the time of project appraisal, was estimated at P9,843 per capita. Resource and social assessment results at that time estimated that 80% to 95% of the population in the new bays and 65% in the old bays had incomes below the threshold. In the same studies, the annual average household income for the target sites was only P45,110. While the incidence of poverty in the Philippines has declined since 2003, it is very difficult to ascertain the extent to which the Project has succeeded in contributing to poverty reduction in the project sites because the project framework did not clearly state its targets or indicators concerning this goal (that is, how much poverty incidence was expected to be reduced and how many fishing households would benefit). As originally designed, the achievement of the poverty reduction goal is to be measured three years after project completion. Nonetheless, interactions with fishing communities during the PCR mission and studies done by the executing agency after project completion<sup>4</sup> showed that incomes of fisher households had increased incomes ranging from P600 to P1,500 a month as a result of fishing activities, especially during the peak season (see Appendix 10).

## **C. Efficiency in Achieving Outcome and Outputs**

42. Financial analysis was conducted to assess the financial viability of six major microenterprises established by fisher associations or cooperatives under the Project. These include (i) seaweed culture, (ii) milkfish de-boning, (iii) mudcrab culture, (iv) grouper cage culture, (v) milkfish cage culture, and (vi) swine fattening. Results show that each representative microenterprise is financially viable, with financial internal rates of return (FIRRs) above 24%, the market interest rate for micro-credit. At a discount rate of 24%, the net present values are all greater than zero or positive (see Tables A11.1–A11.7). Results of the sensitivity analysis reveal that the FIRR values are highly sensitive with respect to changes in revenue and production cost, as evident from the high sensitivity indicator values, which are greater than one (i.e., SI > 1) (see Table A11.8).

43. The Project will generate an economic internal rate of return (EIRR) of 30.72%, which is higher than the 21% and 26% arrived at during the appraisal stage and the midterm review. The higher estimated EIRR is attributed to the higher economic price of fish, the lower total project

---

<sup>3</sup> The BAS data may not be specific to the project sites, but the same source was used in setting targets during project design.

<sup>4</sup> *Assessment of Socio-economic and Institutional Impacts of Project Activities.*

cost, and the increasing trend in fish production in the economic analysis. The Project is economically viable since the base case EIRR of 30.72% is higher than the social opportunity cost of capital of 15% (see Table A11.24). At a discount rate of 15%, the estimated net present value implies that the Project will generate P2,030 million for the Philippine economy. The recalculated EIRRs are insensitive to variations in project costs and benefits since the sensitivity indicator values are less than 1.0. The switching values technique was also applied in sensitivity analysis. The figures indicate that even with large changes in costs and benefits (ranging from 34.90% to >100%), the Project will be able to maintain an EIRR equal to 15% or the social opportunity cost of capital.

44. Benefit distribution analysis resulted in a poverty impact ratio of 0.67, indicating that the poor in all subsectors of the economy have realized a greater share (67%) of the total net benefits generated by the Project (see Table A11.26).

#### **D. Preliminary Assessment of Sustainability**

45. Measures adopted to sustain and continue the Project included the integration of project initiatives and PhilFIS into the regular units and functions of the Department of Agriculture and BFAR through a memorandum made by the BFAR director in May 2002. This enabled senior BFAR personnel to restructure their organizations and modify their functional set-ups to incorporate project activities, including incorporating PhilFIS into BFAR's information technology center. Other sustainability measures included (i) incorporation of coastal resource management plans into municipal development plans, (ii) assignment of permanent personnel or the creation of units to handle coastal resource management matters at the local government level, and (iii) capacity building of community organizations regarding fisheries law enforcement and alternative livelihoods. However, the executing agency, local government units and people's organizations face issues which, if not addressed, may affect project sustainability.

46. Executive Order 366 issued by the Philippine President in October 2004 seeks to transform BFAR into a staff bureau focused mainly on promoting technologies and knowledge on the fisheries sector through IEC, and protecting and managing the country's marine and aquatic resources through monitoring, control and surveillance. The order proposes that relevant regulatory functions and other existing mandates be transferred to other bureaus within the Department of Agriculture and other government agencies. Given this proposal, all the regional offices will be under the regional executive directors of the Department of Agriculture while the BFAR central office will be under the Philippine Aquaculture Fisheries Extension Agency and left with only two line functions: (i) fisheries law enforcement in areas outside municipal waters and (ii) implementation of resource management policies on declining fish stocks. The order is not yet fully implemented, but there is apprehension within BFAR that the structures and systems established in the central and regional offices during the Project will be disregarded. If this were to happen, the fisheries sector would be denied the attention it urgently requires for the sustainable management of fisheries resources. The outcome of the order remains to be seen.

47. As found during the PCR mission, most local government units had integrated the coastal resource management plans into their municipal development plans, although some units still needed to update their plans even after 2006. The change of local government officials in recent elections may lead to less logistical support being offered for continuing coastal resource management activities, especially if new officials have other priorities. It is therefore important for BFAR to continue (i) advocating to local government executives the integration of fisheries resource management activities into mid-term development plans of LGUs; (ii)

monitoring the updates of coastal resource management plans and (iii) upgrade the capacities of municipal agriculture officers and city agriculture officers on fisheries resource management issues.

48. The management capacity and logistical resources available to people's organizations to expand their microenterprises may hinder the sustainability of the Project. Typhoons in 2005 and 2006 that devastated Regions 4A, 5 and 8 destroyed the majority of fish cage projects. Many of these projects are now non-operational due to the need for much funding for rehabilitation. NGO contracts in many municipalities were already finished. However, due to late engagement of the NGOs, the microenterprise projects that they facilitated were less than a year old and not yet profitable. Although several NGOs continued to assist people's organizations beyond project implementation, BFAR and local government units should network with more NGOs, private institutions and business groups and link them with the people's organizations in regard to technical assistance and fund sourcing. Aside from ensuring the provision of technical assistance, BFAR should ensure through its regional offices and local government units that logistical and financial support to the microenterprises are covered under their regular budget, in line with the job creation program promoted by the country's President.

49. Intensive IEC campaigns coupled with the formation of community-based law enforcement groups such as the fisheries law enforcement teams and the coastal watch teams instilled a strong sense of volunteerism among community members and strengthened the prospects of sustainability. With continued guidance from BFAR and continued local government support for the project activities, the Project's sustainability is assessed to be "likely".

## **E. Impact**

50. The environmental impact was mostly positive as a result of the law enforcement activities and resource enhancement activities. Anecdotal evidence and the executing agency's study of the impact on fish sanctuaries revealed (i) a decreased incidence of illegal fishing activities, (ii) an increase in live coral cover in artificial reefs and fish sanctuaries, (iii) an increase in fish catch rates, and (iv) the reappearance of commercially important fish species (see Appendix 12). The Project's activities also influenced some local government units to formulate ordinances to dismantle illegal fishing structures in municipal waters, for example, in Bani, Pangasinan, where fykes were removed from Tinambac Bay. The microenterprise projects for fish cages may cause their propagation and thus result in pollution, especially if planning, construction and operation of the projects do not conform with environmental safeguards and there is no regular monitoring. However, there are good practices, such as the Basey Mariculture Park in Region 8. Region 8's experience in regulating, managing and controlling mariculture areas should be studied and expanded for replication.

51. The PCR mission's interaction with various stakeholders suggests that the institutional and social impacts of the Project are significant in terms of the following.

- (i) A heightened awareness in fishing communities about fishery resources and coastal ecosystems, which has led to positive changes in attitudes among fishers, especially with regard to shifting the focus from extraction to conservation.
- (ii) An increased sense of volunteerism, with increased participation, accountability and responsibility for the wise use and rehabilitation of marine ecosystems.

- (iii) Increased capacities in resource management (planning, implementation, and monitoring and evaluation skills) and law enforcement among BFAR personnel, local government units and fisher communities.
- (iv) Increased responsibility and accountability of local government units regarding fisheries resource management, through the mainstreaming of coastal resource management plans in barangay and municipal development plans, inter-agency collaboration, and the formation of resource management mechanisms such as bay-wide alliances and inter-municipal task forces.
- (v) The greater leverage of fishers in their relationships with local government units and other stakeholders as a result of formal and strengthened organizations (for example, FARMCs).
- (vi) The adoption of coastal resource management concepts, approaches, strategies and activities at non-project sites.

52. The economic impacts in fishing communities covered by the Project included (i) more diverse sources of income and employment not only for fisher associations but also for individual beneficiaries, including women; (ii) increased fishing incomes as a result of bigger fish catches and fish size, as well as the reappearance of high-value fish species due to effective fisheries law enforcement activities and the spillover effects of resource enhancement projects; and, (iii) increased opportunities for women to increase their incomes from the sale of fish, fish processing and drying, and alternative livelihood activities.

53. Fisher associations that have long been engaged in alternative livelihood projects introduced by the Project generated income that was reinvested in existing livelihood projects or other microenterprise projects, or distributed to their members as profit share, or used for micro-lending. In Region 8, multi-purpose cooperatives formed under the initial Fisheries Sector Program and reinvigorated and federated into a secondary cooperative under the Project provided various services to their members. These services included savings mobilization and credits for economic and emergency purposes. For example, 15 multi-purpose cooperatives in the region have extended loans totaling P2.916 million to 2,139 members. Other sources of income generated by the Project for fisher associations and their members included (i) wage employment as caretakers in mariculture projects or as paid laborers in mangrove rehabilitation projects, (ii) sales of mangrove seedlings for resource enhancement projects and seaweed propagules, and (iii) fees collected from tourists who visited some of the established resource enhancement projects that have become eco-tourism destinations. As shown in Appendix 1, some project beneficiaries reported additional investments in fishing and household assets and education of their children, as well as home improvements. The Project also opened opportunities for revenue generation by local government units in the form of fees collected from violators of municipal fisheries regulations and fees for licensing and mariculture project business permits.

54. As stated in the RRP, gender concerns should have been integrated into all project activities, but they were not reflected in the monitoring and evaluation tool designed by the Project. The integration of gender concerns was left to the discretion of contracted NGOs. Nonetheless, based on the project reports and observations during the PCR mission, women's participation was significant, especially in resource management activities and in membership and leadership even in male-dominated people's organizations. The Project also provided opportunities for women to increase their income and contribution to households. In hindsight,

women's involvement and benefits from the Project could have been given more significant attention if community organizing strategies, targets and monitoring and evaluation mechanisms had clearly identified women and gender concerns that could be addressed by the Project.

55. Since the project sites are mostly near urban areas, the Project did not have any indigenous participants or beneficiaries and did not encounter any issues related to indigenous people during implementation.

#### **IV. OVERALL ASSESSMENT AND RECOMMENDATIONS**

##### **A. Overall Assessment**

56. The overall performance of the Project is rated "successful". It was relevant to the Government and ADB's fisheries policy<sup>5</sup> when it was prepared, and it continues to be relevant after completion. While the Project encountered implementation delays, it met 95% of its physical targets (see Appendix 1). Changes made during implementation improved the outcome (for example, by providing start-up capital for microenterprises using part of the training budget to set up demonstration units). Overall, the reevaluated EIRR of 30.72% is acceptable and indicates that the Project was efficient.

57. The performance and outcomes, especially in reversing the trend of declining municipal capture fisheries, were in line with the main expectations of the Project. Based on the Project's logical framework, the extent to which the incidence of poverty has been reduced in coastal communities as a result of the project activities can only be ascertained three years after project completion. Nonetheless, the PCR's benefit distribution analysis resulted in a poverty impact ratio of 0.67, indicating that the poor in coastal communities experienced a greater share (67%) of the project benefits compared to other community members whose income levels are above the poverty threshold.

##### **B. Lessons**

58. The following lessons were gained from the Project.

- (i) The undertaking of a memorandum of agreement with the provision of integrating coastal resource management plans in barangay and municipal development plans, with budgetary allotments, is a constructive way of engaging local governments to maintain coastal resource management sustainability.
- (ii) Involving and strengthening as many stakeholders as possible in coastal resource management through the formation of people's organizations, community-based law enforcement teams and multi-stakeholder local management councils, coupled with intensive IEC campaigns, are effective strategies for implementing resource management projects with a poverty reduction objective.
- (iii) Resource and social assessments and socioeconomic assessment activities can have an impact on project planning and evaluation if they are not implemented sufficiently early in the project implementation phase. Hence, effective measures

---

<sup>5</sup> ADB. 1997. *The Bank's Policy on Fisheries*. Manila.

should be undertaken to plan and carry out these activities early during project implementation (for example, by simplifying contracting procedures for NGOs).

## C. Recommendations

### 1. Project-Related

59. **Future monitoring.** Continued monitoring of project activities after completion should be done by local government units, with BFAR support, with regard to (i) updating coastal resource management plans, (ii) strengthening fisheries licensing, (iii) providing logistical support to the activities of fisheries law enforcement teams and coastal watch teams, and (iv) expanding resource enhancement projects and activities. Fisher organizations and cooperatives should continue to be monitored closely regarding the implementation of microenterprise and livelihood projects.

60. **Covenants.** It is recommended that the executing agency monitor the local government units for up to three years regarding their compliance on (i) the regular and timely release of adequate counterpart funds and budgetary allocations to PhilFIS, BAS, and cyanide detection test laboratories; and (ii) the conduct of gender training for staff.

61. **Further actions or follow-up.** The executing agency, through its regional offices, should ensure that the local government units properly maintain data and telecommunications equipment, as well as provide funds for repairs. In line with this, the executing agency should consider engaging a telecommunications service provider to support the technical needs of local government units and to assist in the regular maintenance of the whole system. Furthermore, fisher organizations should be linked to credit and financing institutions while microenterprise projects should be linked to markets. Other microenterprise projects, such as the mariculture of high value species (sea cucumbers, sea urchins and abalone) that require less capital input and that are less vulnerable to typhoons, could be considered. The executing agency, through its regional offices, should continue to conduct awareness, advocacy and capacity building activities on coastal resource management for LGUs, fisherfolk, women's groups and other stakeholders in coastal communities.

62. **Timing of the project performance evaluation report.** The project performance evaluation review mission may be fielded in 2009, about three years after project completion. This will allow time for microenterprise and livelihood projects and resource enhancement activities with long gestation periods to create significant impacts in coastal communities.

### 2. General

63. For future projects in the Philippines, the following actions are recommended.

- (i) The executing agency and ADB should agree on gender disaggregated monitoring indicators for measuring project progress at the start of a project. Quantitative indicators must be specific, measurable and feasible for data collection, and should enable evaluation of project impacts.
- (ii) Time-series studies should be done to identify the situation without the project, to monitor the changes during a project, and to determine the impact after a project is completed. For fisheries and resource management projects, monitoring of

coastal habitats should be done every five years, if possible. This should include ex-post socioeconomic surveys of fishing households.

- (iii) Although ADB guidelines contain consulting services provisions whereby NGOs and resource and social assessment institutions are to be engaged on a yearly basis, these institutions could be engaged more quickly if they were contracted under the categories of research and studies, and extension and training loan categories. ADB guidelines allow modification of standard guidelines on a case-by-case basis if proper justification is provided and threshold limits are established. In addition, multi-year contracts could be awarded if criteria for annual evaluations were established. Multi-year contracts would ensure continuity of community organizing efforts and help to avoid delays in implementation.
- (iv) During project implementation, implementing agencies should be provided with upfront training (with subsequent refresher courses) on project environmental safeguards.

## PROJECT FRAMEWORK

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
<p><b>Goals</b> Long-term sustainable development in the fisheries sector</p>	<p>The declining rate of municipal capture fisheries will be reduced from current 4.5 percent per annum to 1.9 percent in Project areas during the Project Period, and will be further reduced to 1.5 percent per annum after Project completion.</p>	<p>Biannual resource and social assessment (RSA) conducted in Project areas</p>	<p>Political instability (risk)</p>	<p>Based on national fisheries data from the Bureau of Agricultural Statistics (BAS), the projected declining trend in municipal fisheries production at project appraisal was reversed to a positive trend during and after the project implementation period. The country's municipal marine production increased by 6.8% per annum during the project implementation period (1999-2005). It increased further by 8.7% from 2005 to 2006 (after project completion). Although the BAS data may not be specific to the project sites, the same source was used to analyze the status of municipal fisheries and to set targets during the Project design. Moreover, the bays covered by the Project accounted for 75% of the 26 priority bays in the country.</p> <p>Data on fish catch per trip gathered from the 2005 Fishers' Survey prepared by the Bureau of Fisheries and Aquatic Resources (BFAR) and the results of the Project Completion Review mission using interviews with informants validated the BAS data. The Project's impact on the fish catch of fishers operating close to fish sanctuaries based on the 2005 BFAR survey are as follows:</p>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
				<p>1. Sogod Bay</p> <ul style="list-style-type: none"> <li>a. 73% reported an increase in fish catch of 2-3 kilograms (kg) in San Francisco;</li> <li>b. 75% indicated an increase of 2 kg in Liloan;</li> <li>c. 47% reported an increase of 1-2 kg in Malitbog.</li> </ul> <p>2. Sapián Bay</p> <ul style="list-style-type: none"> <li>a. 75% noted an increase of 3 kg in Sapián;</li> <li>b. 30% reported an increase of 1.5 kg in Batán;</li> <li>c. 43% noted an increase of 10 kg in Ivisan</li> </ul> <p>Results of interviews with fishers during the PCR mission are the following:</p> <ul style="list-style-type: none"> <li>1. Bani, Pangasinan: From 3.25 kg/day or per trip before the Project to 7kg/day or per trip in 2007 (average for all gears) and from 0.5 kg/day or per trip before the Project to 3-5 kg/day or per trip in 2007 using gillnet;</li> <li>2. Palawan: From less than 1 kg per trip (3-4 hours) before the Project to 30-40 kg per trip in 2007;</li> <li>3. Mercedes (Region 5) <ul style="list-style-type: none"> <li>a. Fish from 2-3 kg/trip before the Project to 5 kg/trip using longlines in 2007;</li> <li>b. Crabs in mangroves: From 3 kg/day before the Project to 15 kg/day</li> </ul> </li> </ul>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
Poverty reduction among municipal fisherfolk	Poverty will be reduced from current 80-95 percent in the new bays and 65 percent in the old bays 3 years after Project completion	Project Completion Report (PCR) and Project Performance Audit Report (PPAR)		<p>in 2007;  c. Shrimps: From 5-7 kg/day before the Project to 5 kg/day in 2007;</p> <p>4. Gingoog Bay (Region 10)  a. Gingoog: From 1.5 kg/day before the Project to 5-10 kg/day in 2007;  b. Talisayan: From 1-1.2 kg/day before the Project to 5-10 kg/day in 2007;  c. Magsaysay: From 1.8 kg per day before the Project to 5 kg/day in 2007.</p> <p>Although achievement of the goal is to be measured 3 years after project completion, economic results of an impact evaluation study by BFAR in 2005 and the testimonies of project beneficiaries during the PCR mission show that the economic status of fishing households in project areas has improved as evident from: (i) improved incomes from fishing; (ii) additional income from alternative livelihood projects and to a limited extent; (iii) increased income from wage employment in mariculture and other livelihood projects; (iv) increased savings; and (v) investments in fishing assets, household assets, education of</p>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
				<p>children, alternative livelihood projects and home improvements.</p> <p>The Impact Evaluation Survey (IES) results are as follows:</p> <ol style="list-style-type: none"> <li>1. The overall rating of the impact on household fishing income is generally positive. <ol style="list-style-type: none"> <li>a. Puerto Princesa Bay: Increase of up to 25% in household income reported;</li> <li>b. Honda Bay: Increase in income due to bigger fish catch, reduced illegal fishing and positive effects of fish sanctuary;</li> <li>c. Lagonoy Gulf: Household income more than doubled in two municipalities;</li> <li>d. Butuan Bay: Fishing income increased from P1,000/month in 2001-2002 in Nasipit to P3,000-4,000 in 2005;</li> <li>e. Calauag Bay: Household income in 2 barangays in Calauag, Quezon increased by more than 20%; all barangays in Quezon municipality showed positive changes in household fishing incomes;</li> <li>f. Sogod Bay and Sapijan Bay: About 77% of the respondents had monthly income in the range of P2,000 and below. In</li> </ol> </li> </ol>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
				2005. The number of respondents in the lowest income bracket declined. In Davao Oriental, three barangays indicated an increase in household fishing income, the maximum being about P3,000-4,000/month.
<p><b>Objective</b> Reverse the trend of Fisheries resource depletion in municipal waters</p>	<p>Destructive fishing activities will be reduced to a minimal level in Project areas at the end of the Project</p> <p>No increase in the number of municipal fishing boats in Project areas after Project completion</p>	<p>Biannual RSA</p> <p>Project Management Office (PMO) Project Implementation Unit (PIU) Reports</p> <p>Fishing licensing systems</p>	<p>Adverse changes in relative prices (risk)</p> <p>Large natural disasters (risk)</p>	<p>Based on interviews with informants during the mission reviews to project sites, destructive or illegal fishing activities have been reduced by up to 80% in some areas due to law enforcement activities, with reported increases in fishing incomes at project sites, improved fish stocks in sanctuaries monitored by BFAR, and moderate to high increases in fish biomass in marine sanctuaries and protected areas.</p> <p>It is premature to assess this indicator. Nevertheless, the municipal fishing registration and licensing systems developed under the Project can be used to monitor the number of fishing licenses issued.</p>
<p><b>Outputs</b></p> <p><b>1. Fisheries Resource Management</b></p> <p>1.1 Philippine Fisheries Information System (PHILFIS) operational</p>	<p><b>1. Fisheries Resource Management</b></p> <p>1.1 Continued operation at the end of the Project</p>	<p>PMO and Loan Review Mission Reports</p> <p>Social surveys</p> <p>Fishing licensing systems</p>	<p><b>1. Fisheries Resource Management</b></p> <p>Continued implementation of the fisheries resource management systems after</p>	<p>The PCR mission noted that PHILFIS is not fully functional. Some LGUs stopped operating</p>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
<p>and sustained</p> <p>1.2 Coastal resource Management (CRM) plans, developed, implemented and institutionalized into local development plans</p>	<p>1.2 CRM plans drafted in 7 new bays, updated in 11 old bays, and implemented in all 18 bays by the end of the Project</p> <p>Number of resource and social assessments (RSAs) conducted<sup>a</sup> - 43</p> <p>Number of barangay CRM plans drafted<sup>a</sup> – 1,060</p> <p>Number of barangay CRM plans approved<sup>a</sup> – 1,060</p> <p>Number of municipal CRM plans drafted<sup>a</sup> – 100</p>		<p>Project completion, with strong support from national and local leaders, sufficient budget allocation, and competent staff with stable assignments in the BFAR, Department of Agriculture-Regional Offices (DA-RO) and local government units (LGUs).</p> <p>Lack of complete control on the negative impacts on fish habitats from siltation and pollution (risk).</p>	<p>the system due to the departure of staff trained in operating the system as well as poor maintenance of computers. Most LGUs do not have a budget for repair and maintenance of computers in the PHILFIS operation.</p> <p>Only 17 RSAs conducted, just 40% of the target. Implementation of RSAs delayed due to the late engagement of the project management consultant and the delayed development of RSA terms of reference.</p> <p>1,043 barangay CRM plans drafted, 98.4% of the target.</p> <p>988 barangay CRM plans approved, 94.2% of the target. Targets in some barangays in Region 5 were not met.</p> <p>98 municipal CRM plans drafted, 98% of the target. Two LGUs in Region 5 (Sorsogon</p>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
1.3 Fisheries legislation and	<p>Number of municipal CRM plans approved<sup>a</sup> – 100</p> <p>Number of resource enhancement project (REP) plans drafted<sup>a</sup> – 101</p> <p>Number of REPs implemented<sup>a</sup> – 101</p> <p>Integrated CRM implemented in Puerto Princesa consisting of reforestation of 6 hectares (ha) of mangrove areas and 2 ha of nipa/pandan areas as well as management of 110 hectares of upland areas and rehabilitation of 3 kilometers (km) of riverbanks<sup>a</sup></p> <p>1.3 Revised commercial</p>			<p>Bay) have no such plans.</p> <p>89 municipal CRM plans approved, 89% of the target. Eleven LGUs in Regions 1 (2), 5(2), 6 (3), and 11 (4) have no approved CRM plans.</p> <p>138 REP plans drafted; exceeding the target.</p> <p>185 REPs implemented, exceeded the target. LGUs continue to support the maintenance of REPs and other fisheries resource management activities beyond the Project, making allocations in annual budgets for fisheries resource management and development. CRM plans were Incorporated in the municipal development plans to assure budgetary support for sustainability.</p> <p>Integrated CRM implemented in Puerto Princesa consisting of reforestation of 17 ha of mangrove areas and 2 ha of nipa/pandan areas as well as management of 125 hectares of upland areas and rehabilitation of 3 km of riverbanks.</p> <p>Delayed implementation of</p>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
<p>regulations strengthened</p> <p>1.4 Community-based law</p>	<p>fishing licensing system implemented nationwide by end of June 1998 and moratorium on issuing licenses to commercial fishing vessels less than 250 gross registered tons (grt) by the end of October 1998</p> <p>Comprehensive municipal fisheries ordinances enacted in about 100 municipalities in Project areas by the end of the Project.</p> <p>Municipal licensing system implemented in about 100 municipalities in Project areas by the end of the Project.</p> <p>1.4 Fisheries Law Enforcement</p>			<p>revised commercial fishing licensing system due to setbacks in the timely procurement of hardware and software for PHILFIS. Registration of commercial fishing vessels and gears began in December 2003 and was extended until 29 October 2004. The moratorium on issuing new fishing licenses to commercial fishing vessels was delayed due to the need for a database of existing vessels, whether or not registered with BFAR or the Maritime Industry Authority (MARINA). It operated from October 2004 until October 2005.</p> <p>Republic Act (RA) 8550-based ordinances enacted in 93 municipalities, 93% of the target. Six municipalities in Region 11 (Davao Gulf) and one in Puerto Princesa have not enacted or updated their ordinances. Public committee hearings of ordinances are continuing in these municipalities.</p> <p>Municipal licensing system installed in 100 municipalities. Some municipalities in Region 11 (Davao Gulf) have not complied with the requirements of the system.</p>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
<p>enforcement established, strengthened and sustained</p> <p>1.5 Regional coordination of nearshore monitoring, control and surveillance (MCS) established, operationalized and sustained</p>	<p>Teams (FLETS) established in 7 new bays and strengthened in all 18 bays; their operation sustained at the end of the Project.</p> <p>100 FLETS established<sup>a</sup></p> <p>1,059 coast watch teams established<sup>a</sup></p> <p>1.5 Continued operation of 4 MCS centers at the end of the Project.</p>			<p>100 FLETS established; 100% of target attained.</p> <p>987 coast watch teams established, 93.2% of the target. Non-attainment of targets in Regions 1, 5 and 11.</p> <p>4 MCS centers established (BFAR central office, Davao, Carigara and Puerto Princesa). MCS centers were partly functional due to a delay in the PHILFIS work needed for the provision of infrastructure for the database and communication system.</p>
<p><b>2. Income Diversification</b></p> <p>2.1 Self-reliant groups established, strengthened sustained, capable of mobilizing internal savings and having access to microcredit</p> <p>2.2 Microenterprises developed by self-reliant groups and their members, financed by internal savings and/or microcredit</p>	<p><b>2. Income Diversification</b></p> <p>2.1 About 15,000-20,000 fisherfolk and other coastal villagers join self-reliant groups either through organizing new groups or expanding existing ones in the Project areas; average savings per member will be about P2,000 at the end of the Project.</p> <p>2.2 About 25-40% of groups and/or their members started microenterprises</p> <p>5,270 fishers involved in microenterprises<sup>a</sup></p>	<p>Project Management Office (PMO) and Loan Review Mission reports</p> <p>Nonprofit organization (NPO) auditing reports</p> <p>Social surveys</p> <p>PCR and PPAR</p>	<p><b>2. Income Diversification</b></p> <p>Continued technical support from the NPOs and/or their federations after Project completion, sustaining the self-reliant groups formed under the Project.</p> <p>Sustained development of mariculture and other enterprises.</p> <p>High pressure from population growth (risk).</p> <p>Natural disasters (risk).</p>	<p>27,203 fishers organized; exceeded the target; average savings of PhP482 per member, much lower than the target of P2,000 at the end of the project due to delayed contracts for some NGOs to conduct community organizing and difficulty of poor fishing households to earn surplus income.</p> <p>10,099 fishers involved in microenterprises, 37% of the total number of fishers organized into people's organizations. The target at appraisal was met while the</p>

Design Summary	Targets/Indicators	Monitoring Mechanism	Assumptions/Risks	PCR Evaluation of Accomplishments
<p>2.3 Mariculture and other enterprises pilot-tested and developed in selected project sites</p> <p><b>3. Capacity Building</b> 3.1 Public fisheries agencies strengthened to better manage fisheries resources</p> <p>3.2 Mechanism established and sustained to coordinate baywide</p>	<p>101 microenterprises established<sup>a</sup></p> <p>2.3 Seaweed production expanded in about 15 project sites by the end of the Project; other mariculture projects started in about 20 project sites 3-5 years after Project completion.</p> <p><b>3. Capacity Building</b> 3.1 PMO, PIU and field management units (FMUs) strengthened by the end of the Project, capable to design, implement and monitor their own programs in CRM and income diversification.</p> <p>3.2 Bay Management Council (BMC) established in 7 new bays, strengthened in</p>	<p>PMO and Loan Review Mission reports</p> <p>PCR and PPAR</p>	<p><b>3. Capacity Building</b> Continued capacity building in public agencies in charge of fisheries resource management after Project completion.</p> <p>Staff stability in BFAR, DA-RO and LGUs after Project completion.</p>	<p>revised target was exceeded. Some people's organizations sourced funds from LGUs, non-government organizations (NGOs), other government agencies and multi-purpose cooperatives engaged in micro-lending activities, especially after the project completion.</p> <p>333 microenterprises were established, exceeding the target.</p> <p>Introduced seaweed production in at least 33 LGUs. It is premature to ascertain the number of mariculture projects 3-5 years after Project completion.</p> <p>The BFAR PMO, implementing units and field management units are capable of designing, implementing and monitoring programs in CRM and income diversification. BFAR has integrated the CRM process and framework in its regular programs and has continued regular monitoring of livelihood projects to ensure sustainability.</p> <p>BFAR PMO accorded lower priority to bay management councils due to a stronger focus on creating integrated</p>

<b>Design Summary</b>	<b>Targets/Indicators</b>	<b>Monitoring Mechanism</b>	<b>Assumptions/Risks</b>	<b>PCR Evaluation of Accomplishments</b>
coastal resource management (CRM) issues	all 18 bays, and sustained at the end of the Project.			fisheries and aquatic resources management councils (FARMCs) in compliance with the Fisheries Code of 1998, as well as a stronger focus on fisheries resource management activities in individual municipalities. FARMC participation in project planning and implementation is evident in all project activities, from the identification of resource management during the CRM planning to Information Education Campaign (IEC) through formulation of resolutions and ordinances. Strengthening of FARMCs is part of the annual work plan of BFAR's regional offices.

## PROJECT FRAMEWORK

Activities	Inputs	Monitoring Mechanism	Assumptions	PCR Evaluation of Accomplishments
<p><b>Project Preparation:</b> Set up PMO in BFAR</p> <p>Set up PIU in DA-RO</p> <p>Set up FMU in LGUs</p> <p>Set up Project Performance Management System</p> <p>Set up accounting and auditing systems</p> <p>Set up contracting and procurement systems</p> <p>Conduct social surveys to collect benchmark data</p>		<p>PMO/PIU reports</p> <p>Inception Mission report</p>	<p><b>General</b></p> <ul style="list-style-type: none"> <li>● DA strong ownership of commitment to and support for the Project.</li> <li>● Competent staff available in BFAR/FSP-PMO.</li> <li>● Competent staff available in DA-RO.</li> <li>● Minimal delays in budget release.</li> <li>● Stable assignment of staff in PMO/PIU/FMU.</li> <li>● Openings available in BFAR in a late stage to regularize contractual staff.</li> <li>● Complexity of the Project design as required by the nature of the sector issues (risk).</li> </ul>	<p>Implemented before loan effectiveness date.</p> <p>Project implementing units were set up in BFAR regional offices rather than in the Department of Agriculture's regional offices.</p> <p>Implemented before loan effectiveness date.</p> <p>Implemented before loan effectiveness date.</p> <p>Implemented before loan effectiveness date.</p> <p>Implemented before loan effectiveness date.</p> <p>Social surveys in the new bays were delayed. Instead of starting in the second quarter of 1998, the first contract began in January 2000.</p>
<p><b>1. Fisheries Resource Management</b></p> <p><b>1.1 Fisheries Information System</b> Review PHILFIS and develop plans to improve and sustain PHILFIS Implement the plans, linking PHILFIS to remote stations</p> <p><b>1.2 CRM Planning and Implementation</b> Conduct information and</p>	<p>\$0.32 million</p> <p>\$0.40 million</p>	<p>PMO/PIU reports</p> <p>Social surveys</p> <p>Loan Review Mission reports</p>	<p><b>1. Fisheries Resource Management</b></p> <p><b>1.1 Fisheries Information System</b></p> <ul style="list-style-type: none"> <li>● Regular budget allocation to BAS for fisheries data collection during Project period and beyond</li> <li>● Active participation of PHILFIS staff.</li> </ul> <p><b>1.2 CRM Planning and Implementation</b></p> <ul style="list-style-type: none"> <li>● Sufficient research</li> </ul>	<p>Implemented as appraised, but delayed due to long delays in procuring hardware and software packages.</p> <p>Implemented as appraised.</p>

Activities	Inputs	Monitoring Mechanism	Assumptions	PCR Evaluation of Accomplishments
<p>education campaign nationwide and in Project areas Conduct RSA in all 18 bays once every two years</p> <p>Improve mapping and geographic information system (GIS) in BFAR Develop CRM plans in 7 new bays and update in 11 old bays Implement CRM plans in all 18 bays Institutionalize CRM into local development plans Pilot-test integrated CRM in Puerto Princesa</p> <p><b>1.3 Fisheries Legislation and Regulation</b></p> <p>DA facilitates enactment of Fisheries Code BAR implements the revised commercial fishing vessels less than 250 grt</p> <p>LGUs enact comprehensive municipal fishing ordinances BFAR procures computers for fishing licensing BFAR trains trainers on licensing LGUs set up municipal fisheries licensing</p>	<p>\$7.6 million</p> <p>\$4.7 million</p> <p>\$0.5 million</p> <p>\$3.0 million</p> <p>\$8.3 million</p> <p>\$3.0 million</p> <p>\$0.3 million</p> <p>\$0.3 million</p> <p>\$1.6 million</p> <p>\$0.4 million</p>		<p>institutions capable and willing to participate in RSA.</p> <ul style="list-style-type: none"> <li>● Sufficient number of DA-RO and provincial staff with fisheries background to participate in RSA.</li> <li>● Active participation of all stakeholders specially fisherfolk in CRM.</li> <li>● LGUs are interested in CRM.</li> </ul> <p><b>1.3 Fisheries Legislation and Regulation</b></p> <ul style="list-style-type: none"> <li>● DA obtains Congress support after dialogue.</li> <li>● No strong opposition to licensing system.</li> <li>● No strong opposition to block the moratorium.</li> <li>● Strong support from LGU leaders.</li> <li>● Support from local legislative agencies.</li> <li>● Sufficient capacity to conduct licensing training.</li> <li>● Competent LGU staff assigned for the licensing system and stabilized after training.</li> </ul>	<p>Not accomplished, only one social assessment done for new bays.</p> <p>Implemented as appraised.</p> <p>Implemented but at local government level, not baywide.</p> <p>Implemented at local government level. Implemented as appraised.</p> <p>Implemented as appraised and completed as scheduled.</p> <p>Implemented as appraised.</p> <p>Delayed, but implemented revised commercial fisheries licensing system and moratorium on new licenses for commercial fishing vessels less than 250 grt.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised, but delayed. Implemented as appraised.</p> <p>Implemented as appraised, but delayed.</p>

Activities	Inputs	Monitoring Mechanism	Assumptions	PCR Evaluation of Accomplishments
<p>systems</p> <p><b>1.4 Fisheries Law Enforcement</b>            LGUs set up Fisheries Law Enforcement Teams (FLET) and Coast Watch system            Procure patrol boats and equipment            Train FLET members on apprehension            Conduct legal seminars for local judges            Continue FLET operations</p> <p><b>1.5 Regional Coordination through MCS Centers</b>            Set up and operationalize 4 MCS centers</p> <p>Set up and operationalize 5 cyanide detection test (CDT) laboratories            Government adopts CDT for all live fish exports</p> <p><b>2. Income Diversification</b>  <b>2.1 Community Development</b>            Conduct training for all Project implementors on self-reliant group formation            Develop policies and guidelines for community development            Select and contract</p>	<p>\$5.2 million</p> <p>\$0.4 million</p> <p>\$0.1 million</p> <p>\$8.1 million</p> <p>\$3.0 million</p> <p>\$2.6 million</p> <p>\$4.7 million</p>	<p>PMO/PIU reports</p> <p>Social surveys</p> <p>Loan Review Mission reports</p>	<p><b>1.4 Fisheries Law Enforcement</b></p> <ul style="list-style-type: none"> <li>● Strong LGU leadership</li> <li>● Active fisherfolk participation</li> <li>● Support from local judges/prosecutors</li> <li>● Regular budget to sustain FLET after the Project</li> </ul> <p><b>1.6 Regional Coordination through MCS Centers</b></p> <ul style="list-style-type: none"> <li>● Capacity available for setting up CDT laboratories.</li> <li>● Stable staff assignment for MCS and CDT.</li> </ul> <p><b>2. Income Diversification</b>  <b>2.1 Community Development</b></p> <ul style="list-style-type: none"> <li>● Competent NPOs exist and are willing to participate.</li> <li>● DA and LGUs support self-reliant groups such as cooperatives.</li> <li>● Active participation of fisherfolk in community development.</li> <li>● Community groups such as cooperatives formed under</li> </ul>	<p>Implemented as appraised.</p> <p>Implemented, but ongoing for some local government units. Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>FLET operations continued after Project completion , with logistical support from LGUs.</p> <p>Implemented as appraised, but MCS centers are only partly functioning. Implemented as appraised.</p> <p>Implemented as appraised, but BFAR does not require that tests are mandatory.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented but delayed. Implemented as appraised</p>

Activities	Inputs	Monitoring Mechanism	Assumptions	PCR Evaluation of Accomplishments
<p>NPO/CO motivate prospective group members to set up new groups or expand existing ones, and motivate internal savings</p> <p>CO conducts training for group leaders and members</p> <p>BFAR monitors and audits NPOs</p> <p><b>2.2 Microenterprise Development</b></p> <p>Training on microenterprise management</p> <p>Training on microenterprise technologies</p> <p>Community groups start microenterprises</p> <p>Continued training financed by beneficiaries</p> <p><b>2.3 Mariculture Development</b></p> <p>Develop inventory of mariculture technologies</p> <p>Select technologies</p> <p>Select and contract research institutions</p> <p>Conduct on-site verification of technologies</p>	<p>\$2.3 million</p> <p>\$1 million</p> <p>\$2.36 million</p> <p>\$1.1 million</p> <p>\$0.004 million</p> <p>\$0.8 million</p> <p>\$0.1 million</p>		<p>the Project will be linked to the national/regional cooperative centers</p> <ul style="list-style-type: none"> <li>PMO and PIU capacity to audit NPOs is sufficient.</li> </ul> <p><b>2.2 Microenterprise Development</b></p> <ul style="list-style-type: none"> <li>Opportunities exist for microenterprise development once fisherfolk organized with microcredit and support from cooperative network.</li> <li>Self-reliant groups capable to mobilize internal savings to finance microenterprises.</li> <li>The groups have access to credit from cooperative network and the Land Bank of the Philippines (LBP).</li> <li>LBP has sufficient funds for once groups become "bankable".</li> </ul> <p><b>2.3 Mariculture Development</b></p> <p>Mature mariculture technologies exist</p> <ul style="list-style-type: none"> <li>Private investors are willing to participate if there are successful market research, feasibility studies, and pilot testing.</li> <li>Competent research institutions exist and are willing to participate</li> </ul>	<p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Implemented as appraised.</p> <p>Limited market research and feasibility studies done; in some LGUs, no market research was done before livelihood projects were introduced.</p>

Activities	Inputs	Monitoring Mechanism	Assumptions	PCR Evaluation of Accomplishments
Conduct market research and feasibility studies	\$1.5 million		<ul style="list-style-type: none"> <li>Members of the self-reliant groups are interested in mariculture development.</li> </ul>	Implemented as appraised.
	\$2.0 million		<ul style="list-style-type: none"> <li>Small-scale technology can be developed to fit the investment and management capacities of fisherfolk and their cooperatives.</li> </ul>	Implemented as appraised.
Pilot-test farm-level technology packages			<ul style="list-style-type: none"> <li>Sufficient number of extension workers exists.</li> </ul>	Implemented as appraised
Set up extension system and sustain its operation	\$1.46 million			Implemented as appraised
Pilot-test cost-sharing Schemes	\$0.96 million		<p><b>3. Capacity Building</b></p>	Implemented as appraised
<b>3. Capacity Building</b>			<ul style="list-style-type: none"> <li>Competent institutional experts are available.</li> </ul>	Implemented as appraised
<b>3.1 Strengthen Institutions</b>	\$0.123 million		<ul style="list-style-type: none"> <li>Strong coaching teams can be formed.</li> </ul>	Implemented as appraised
Contract consultants and form coaching teams	\$0.262 million		<ul style="list-style-type: none"> <li>LGUs are interested in organizing BMCs.</li> </ul>	Implemented as appraised
Organize international and national-level training	\$2.214 million			Implemented as appraised
Organize regional level training on CRM and Management	\$0.126 million			Implemented but focused more on formation of FARMCs instead of strengthening BMCs
Organize technical training for LGUs staff	\$0.101 million			Conducted as appraised including post-social assessments for old bays; no post-social assessments in new bays.
Provide coaching for PIU/FMU staff				Implemented as appraised.
Review and strengthen BMCs and FARMCs				Implemented as appraised.
Conduct Project impact evaluations				Implemented as appraised.
<b>4. Project Management</b>				Implemented as appraised.
Procurement of equipment				Implemented as appraised.

Activities	Inputs	Monitoring Mechanism	Assumptions	PCR Evaluation of Accomplishments
PMO operation PIU operation FMU operation				

BAS = Bureau of Agricultural Statistics; BFAR = Bureau of Fisheries and Aquatic Resources; BMC = Bay Management Council; CDT = cyanide detection test; CO = community organizer; CRM = coastal resource management; DA-RO = Department of Agriculture-Regional Offices; FARMC= fisheries and aquatic resource management; FLET = fisheries law enforcement team; FMU = field management unit; GIS = geographic information system; IEC = information, education campaign; IES = impact evaluation study; LBP = Land Bank of the Philippines; LGU = local government unit; MARINA = Maritime Industry Authority; MCS = monitoring, control and surveillance; NGO = non-government organization; NPO = nonprofit organization; PCR = Project Completion Report; PHILFIS = Philippine Fisheries Information System; PIU = project implementing unit; PMO = project management office; PPAR = Project Performance Audit Report; REP = resource enhancement project; RSA = resource and social assessment.

<sup>a</sup> Approved during the midterm review mission (October 2001).

Sources: ADB Midterm Review Mission Report; Bureau of Agricultural Statistics, BFAR Project Completion Report, PCR mission interviews and RRP: PHI 26616.

**LOCAL GOVERNMENT APPREHENSIONS FOR ILLEGAL FISHING AND FINES COLLECTED**

Item	Before	During and After Project				Total
	FRMP	2003	2004	2005	2006	
<b>Sto. Tomas, La Union (Lingayen Gulf)</b>						
Seaborne patrols	None	6	12	24	30	72
Apprehensions	None	11	8	16	8	43
Amount of fines collected (P)	None	27,500	15,500	23,000	7,600	73,600
<b>Mabini, Comval (Davao Gulf)</b>						
	<b>Before</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>		<b>Total</b>
Seaborne patrols	None	21	23	7		51
Apprehensions	None	3	4	2		9
Fines collected (P)	None	2,500	1,500			4,000
<b>Lupon, Davao Oriental (Davao Gulf)</b>						
	<b>Before</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>		<b>Total</b>
Seaborne patrols	None	150	150	48		348
Apprehensions	None	5	1			6
Fines collected (P)	None	12,300				12,300
<b>Gingoog, Misamis Oriental (Gingoog Bay)</b>						
	<b>Before</b>		<b>During and After</b>			<b>Total</b>
Seaborne patrols	None					13
Apprehensions	None					10
Fines collected (P)	None					29,765
<b>Region 8 (Carigara Bay)</b>						
	<b>Before</b>		<b>During and After</b>			<b>Total</b>
Seaborne patrols	None					89
Apprehensions	None					1,040
Fines collected (P)	None					271,850
<b>Region 8 (Ormoc Bay)</b>						
	<b>Before</b>		<b>During and After</b>			<b>Total</b>
Seaborne patrols	None					74
Apprehensions	None					68
Fines collected (P)	None					1,000
<b>Region 8 (San Pedro Bay)</b>						
	<b>Before</b>		<b>During and After</b>			<b>Total</b>
Seaborne patrols	None					99
Apprehensions	None					886
Fines collected (P)	None					456,450
<b>Region 8 (Sogod Bay)</b>						
	<b>Before</b>		<b>During and After</b>			<b>Total</b>
Seaborne patrols	None					145
Apprehensions	None					678
Amount of fines collected (P)	None					10,925

Sources: BFAR regional reports on the status of the Project.

**IMPLEMENTED LIVELIHOOD PROJECTS BY TYPE**  
(As of 31 December 2005 and 2006)

Type of Livelihood Enterprise	Number of Projects		Ongoing Projects		Projects with Positive Income
	2005	2006	2005	2006	2006
Merchandising/Trading	108	115	99	107	32
Seaweed Culture	75	91	49	65	8
Fish Processing/Value-Adding	66	69	55	56	25
Mudcrab Culture	40	46	32	37	7
Crops and Vegetable Farming	29	45	24	40	2
Cage Culture of Grouper	36	40	32	34	5
Cage Culture of Milkfish	28	30	13	15	10
Oyster Culture	17	17	7	7	2
Microlending	14	14	14	14	3
Tilapia Culture	13	14	13	14	
Goat Raising	10	11	10	11	
Candle Making	9	9	9	9	1
Broiler Production	8	8	6	7	4
Hog Raising	8	9	8	9	1
Cage Culture of Siganid	8	8	8	7	
Catfish Culture	6	6	6	6	
Dress-making	6	6	6	6	
Mussel Culture	7	7	7	7	
Duck Raising	5	5	5	5	
Food Processing	7	6	6	5	3
Bakery	4	4	4	4	1
Banana Production	5		5	4	
Banana Processing	4	4	4	3	
Cage Culture of Seabass	3	3	3	1	
Pen Culture of Milkfish	2	2	2	1	
Milkfish Fry Trading	1	2		1	
Meat Trading		1		1	
Agri Produce Processing Facility	1	1	1		
Apiculture	1	1			
Ceramics Making	1	1	1	1	
Eatery	1	1	1	1	
Ginger Tea Processing	1	1	1	1	
Ginger Production	1	1	1		
Milkfish Fingerling Production	1	1	1	1	
Mushroom Culture	1	1	1	1	1
Squid Fishing	1	1	1	1	1
Tinagak Making	1	1	1	1	
Pawid Making		1			
Blue Crab Culture	1	1			
Fish Trading	1	1			
Kapis Production	1	1	1	1	
Municipal Fishing Gear	1	1	1	1	

<b>Type of Livelihood Enterprise</b>	<b>Number of Projects</b>		<b>Ongoing Projects</b>		<b>Projects with Positive Income</b>
	<b>2005</b>	<b>2006</b>	<b>2005</b>	<b>2006</b>	<b>2006</b>
Cassava and Peanut Production	4		4	3	
<b>Total</b>	<b>537</b>	<b>587</b>	<b>442</b>	<b>488</b>	<b>106</b>

Source: Bureau of Fisheries and Aquatic Resources-Project Management Office (BFAR-PMO).

## PROJECT COST

Table A4.1: Summary of Project Cost  
(\$'000)

Item	Appraisal			Actual		
	Foreign	Local	Total	Foreign	Local	Total
<b>A. Fisheries Resources Management</b>						
1. Fisheries Information System	230	417	647	746	34	780
2. CRM Planning and Implementation	4,251	17,615	21,866	1,450	10,332	11,782
3. ICRM in Puerto Princesa	248	2,317	2,565	517	1,023	1,540
4. Fisheries Legislation and Regulations	834	1,443	2,277	2,254	405	2,659
5. Community-Based Law Enforcement	2,031	9,620	11,651	4,731	6,478	11,209
6. MCS Centers	2,333	2,552	4,885	942	1,494	2,436
<b>Subtotal (A)</b>	<b>9,927</b>	<b>33,964</b>	<b>43,891</b>	<b>10,640</b>	<b>19,766</b>	<b>30,406</b>
<b>B. Income Diversification</b>						
1. Community Organizing	74	6,820	6,894	492	6,063	6,555
2. Promotion of Microenterprises	0	4,911	4,911	0	1,254	1,254
3. Support for Mariculture Development	141	3,559	3,700	175	2,774	2,949
<b>Subtotal (B)</b>	<b>215</b>	<b>15,290</b>	<b>15,505</b>	<b>667</b>	<b>10,091</b>	<b>10,758</b>
<b>C. Capacity Building</b>						
1. Strengthening of Institutions	78	3,710	3,788	279	1,479	1,758
2. Project Management	214	8,558	8,772	709	8,678	9,387
<b>Subtotal (C)</b>	<b>292</b>	<b>12,268</b>	<b>12,560</b>	<b>988</b>	<b>10,157</b>	<b>11,145</b>
<b>Total</b>						
Total Baseline Costs	10,434	61,522	71,956	12,295	40,014	52,309
Physical Contingencies	1,114	6,152	7,266	0	0	0
Price Contingencies	569	4,959	5,528	0	0	0
Total Project Costs	12,117	72,633	84,750	12,295	40,014	52,309
Interest During Construction (OCR)	3,305	0	3,305	1,970	0	1,970
Interest During Construction (ADF)	401	0	401	318	0	318
<b>Total Costs to be Financed</b>	<b>15,823</b>	<b>72,633</b>	<b>88,456</b>	<b>14,583</b>	<b>40,014</b>	<b>54,597</b>

ADF = Asian Development Fund; CRM = coastal resource management; ICRM = integrated coastal resource management; MCS = monitoring, control and surveillance; OCR = ordinary capital resources.

Source: ADB

**Table A4.2: Expenditures by Financier**  
(\$'000)

Item	ADF			OCR			JBIC		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
<b>A. Fisheries Resources Management</b>									
1. Fisheries Information System	0	0	0	0	0	0	236	144	380
2. CRM Planning and Implementation	424	4,455	4,879	782	3,583	4,365	153	99	252
3. ICRM in Puerto Princesa	0	0	0	0	0	0	485	299	784
4. Fisheries Legislation and Regulations	0	0	0	0	0	0	860	526	1,386
5. Community-Based Law Enforcement	0	0	0	0	0	0	1,412	864	2,276
6. MCS Centers	0	0	0	0	0	0	978	599	1,577
<b>Subtotal (A)</b>	<b>424</b>	<b>4,455</b>	<b>4,879</b>	<b>782</b>	<b>3,583</b>	<b>4,365</b>	<b>4,124</b>	<b>2,531</b>	<b>6,655</b>
<b>B. Income Diversification</b>									
1. Community Organizing	492	5,169	5,661	0	0	0	0	0	0
2. Promotion of Microenterprises	0	0	0	0	0	0	1,528	937	2,465
3. Support for Mariculture Development	175	1,837	2,012	0	0	0	0	0	0
<b>Subtotal (B)</b>	<b>667</b>	<b>7,006</b>	<b>7,673</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,528</b>	<b>937</b>	<b>2,465</b>
<b>C. Capacity Building</b>									
1. Strengthening of Institutions	0	0	0	21	231	252	1,294	793	2,087
2. Project Management	0	0	0	7	1,613	1,620	0	0	0
<b>Subtotal (C)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>1,844</b>	<b>1,872</b>	<b>1,294</b>	<b>793</b>	<b>2,087</b>
<b>Total Baseline Costs</b>	<b>1,091</b>	<b>11,461</b>	<b>12,552</b>	<b>810</b>	<b>5,427</b>	<b>6,237</b>	<b>6,946</b>	<b>4,261</b>	<b>11,207</b>
Physical Contingencies	0	0	0	0	0	0	0	0	0
Price Contingencies	0	0	0	0	0	0	0	0	0
<b>Total Project Costs</b>	<b>1,091</b>	<b>11,461</b>	<b>12,552</b>	<b>810</b>	<b>5,427</b>	<b>6,237</b>	<b>6,946</b>	<b>4,261</b>	<b>11,207</b>
Interest During Construction (OCR)	0	0	0	1,970	0	1,970	0	0	0
Interest During Construction (ADF)	318	0	318	0	0	0	0	0	0
<b>Total Costs to be Financed</b>	<b>1,409</b>	<b>11,461</b>	<b>12,870</b>	<b>2,780</b>	<b>5,427</b>	<b>8,207</b>	<b>6,946</b>	<b>4,261</b>	<b>11,207</b>

Item	LGU			GOP			Total		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
<b>A. Fisheries Resources Management</b>									
1. Fisheries Information System	0	0	0	0	34	34	236	178	414
2. CRM Planning and Implementation	0	1,107	1,107	0	1,187	1,187	1,359	10,431	11,790
3. ICRM in Puerto Princesa	0	851	851	0	141	141	485	1,291	1,776
4. Fisheries Legislation and Regulations	0	0	0	0	123	123	860	649	1,509
5. Community Based Law Enforcement	0	5,445	5,445	0	657	657	1,412	6,966	8,378
6. MCS Centers	0	404	404	0	1,088	1,088	978	2,091	3,069
<b>Subtotal (A)</b>	<b>0</b>	<b>7,807</b>	<b>7,807</b>	<b>0</b>	<b>3,230</b>	<b>3,230</b>	<b>5,330</b>	<b>21,606</b>	<b>26,936</b>
<b>B. Income Diversification</b>									
1. Community Organizing	0	450	450	0	379	379	492	5,998	6,490
2. Promotion of Microenterprises	0	629	629	0	270	270	1,528	1,836	3,364
3. Support for Mariculture Development	0	0	0	0	937	937	175	2,774	2,949
<b>Subtotal (B)</b>	<b>0</b>	<b>1,079</b>	<b>1,079</b>	<b>0</b>	<b>1,586</b>	<b>1,586</b>	<b>2,195</b>	<b>10,608</b>	<b>12,803</b>
<b>C. Capacity Building</b>									
1. Strengthening of Institutions	0	0	0	0	162	162	1,315	1,186	2,501
2. Project Management	0	3,140	3,140	0	3,925	3,925	7	8,678	8,685
<b>Subtotal (C)</b>	<b>0</b>	<b>3,140</b>	<b>3,140</b>	<b>0</b>	<b>4,087</b>	<b>4,087</b>	<b>1,322</b>	<b>9,864</b>	<b>11,186</b>
<b>Total Baseline Costs</b>	<b>0</b>	<b>12,026</b>	<b>12,026</b>	<b>0</b>	<b>8,903</b>	<b>8,903</b>	<b>8,847</b>	<b>42,078</b>	<b>50,925</b>
Physical Contingencies	0	0	0	0	0	0	0	0	0
Price Contingencies	0	0	0	0	0	0	0	0	0
<b>Total Project Costs</b>	<b>0</b>	<b>12,026</b>	<b>12,026</b>	<b>0</b>	<b>8,903</b>	<b>8,903</b>	<b>8,847</b>	<b>42,078</b>	<b>50,925</b>
Interest During Construction (OCR)	0	0	0	0	0	0	1,970	0	1,970
Interest During Construction (ADF)	0	0	0	0	0	0	318	0	318
<b>Total Costs to be Financed</b>	<b>0</b>	<b>12,026</b>	<b>12,026</b>	<b>0</b>	<b>8,903</b>	<b>8,903</b>	<b>11,135</b>	<b>42,078</b>	<b>53,213</b>

ADF = Asian Development Fund; CRM = coastal resource management; GOP = Government of the Philippines; ICRM = integrated coastal resource management; JBIC = Japan Bank for International Cooperation; LGU = local government unit; MCS = monitoring, control and surveillance; OCR = ordinary capital resources.

Source: ADB and Borrower

**Table A4.3: Yearly Expenditures**  
(\$'000)

Item	1999			2000			2001		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
<b>A. Fisheries Resources Management</b>									
1. Fisheries Information System	0	2	2	22	19	41	40	31	71
2. CRM Planning and Implementation	1	217	218	104	1,275	1,379	75	1,084	1,159
3. ICRM in Puerto Princesa	0	76	76	46	159	205	82	185	267
4. Fisheries Legislation and Regulations	0	6	6	81	68	149	146	114	260
5. Community Based Law Enforcement	0	476	476	133	883	1,016	239	951	1,190
6. MCS Centers	0	88	88	92	278	370	165	375	540
<b>Subtotal (A)</b>	<b>1</b>	<b>865</b>	<b>866</b>	<b>478</b>	<b>2,682</b>	<b>3,160</b>	<b>747</b>	<b>2,740</b>	<b>3,487</b>
<b>B. Income Diversification</b>									
1. Community Organizing	0	56	56	3	590	593	2	543	545
2. Promotion of Microenterprises	0	65	65	143	211	354	259	291	550
3. Support for Mariculture Development	0	48	48	1	314	315	0	338	338
<b>Subtotal (B)</b>	<b>0</b>	<b>169</b>	<b>169</b>	<b>147</b>	<b>1,115</b>	<b>1,262</b>	<b>261</b>	<b>1,172</b>	<b>1,433</b>
<b>C. Capacity Building</b>									
1. Strengthening of Institutions	0	11	11	121	140	261	220	189	409
2. Project Management	0	950	950	2	1,314	1,316	0	1,256	1,256
<b>Subtotal (C)</b>	<b>0</b>	<b>961</b>	<b>961</b>	<b>123</b>	<b>1,454</b>	<b>1,577</b>	<b>220</b>	<b>1,445</b>	<b>1,665</b>
<b>Total Baseline Costs</b>	<b>1</b>	<b>1,995</b>	<b>1,996</b>	<b>748</b>	<b>5,251</b>	<b>5,999</b>	<b>1,228</b>	<b>5,357</b>	<b>6,585</b>
Physical Contingencies	0	0	0	0	0	0	0	0	0
Price Contingencies	0	0	0	0	0	0	0	0	0
<b>Total Project Costs</b>	<b>1</b>	<b>1,995</b>	<b>1,996</b>	<b>748</b>	<b>5,251</b>	<b>5,999</b>	<b>1,228</b>	<b>5,357</b>	<b>6,585</b>
Interest During Construction (OCR)	66	0	66	145	0	145	260	0	260
Interest During Construction (ADF)	0	0	0	3	0	3	14	0	14
<b>Total Costs to be Financed</b>	<b>67</b>	<b>1,995</b>	<b>2,062</b>	<b>896</b>	<b>5,251</b>	<b>6,147</b>	<b>1,502</b>	<b>5,357</b>	<b>6,859</b>

Item	2002			2003			2004		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
<b>A. Fisheries Resources Management</b>									
1. Fisheries Information System	75	50	125	34	27	61	18	15	33
2. CRM Planning and Implementation	346	1,471	1,817	45	1,587	1,632	410	1,582	1,992
3. ICRM in Puerto Princesa	154	225	379	69	184	253	35	151	186
4. Fisheries Legislation and Regulations	274	183	457	121	99	220	63	55	118
5. Community-Based Law Enforcement	448	1,077	1,525	200	978	1,178	103	856	959
6. MCS Centers	311	382	693	139	353	492	71	245	316
<b>Subtotal (A)</b>	<b>1,608</b>	<b>3,388</b>	<b>4,996</b>	<b>608</b>	<b>3,228</b>	<b>3,836</b>	<b>700</b>	<b>2,904</b>	<b>3,604</b>
<b>B. Income Diversification</b>									
1. Community Organizing	0	723	723	27	695	722	68	1,130	1,198
2. Promotion of Microenterprises	485	416	901	216	270	486	112	186	298
3. Support for Mariculture Development	0	339	339	10	383	393	25	490	515
<b>Subtotal (B)</b>	<b>485</b>	<b>1,478</b>	<b>1,963</b>	<b>253</b>	<b>1,348</b>	<b>1,601</b>	<b>205</b>	<b>1,806</b>	<b>2,011</b>
<b>C. Capacity Building</b>									
1. Strengthening of Institutions	422	301	723	184	193	377	103	111	214
2. Project Management	2	1,492	1,494	0	1,274	1,274	3	1,043	1,046
<b>Subtotal (C)</b>	<b>424</b>	<b>1,793</b>	<b>2,217</b>	<b>184</b>	<b>1,467</b>	<b>1,651</b>	<b>106</b>	<b>1,154</b>	<b>1,260</b>
<b>Total Baseline Costs</b>	<b>2,517</b>	<b>6,659</b>	<b>9,176</b>	<b>1,045</b>	<b>6,043</b>	<b>7,088</b>	<b>1,011</b>	<b>5,864</b>	<b>6,875</b>
Physical Contingencies	0	0	0	0	0	0	0	0	0
Price Contingencies	0	0	0	0	0	0	0	0	0
<b>Total Project Costs</b>	<b>2,517</b>	<b>6,659</b>	<b>9,176</b>	<b>1,045</b>	<b>6,043</b>	<b>7,088</b>	<b>1,011</b>	<b>5,864</b>	<b>6,875</b>
Interest During Construction (OCR)	346	0	346	395	0	395	376	0	376
Interest During Construction (ADF)	31	0	31	51	0	51	66	0	66
<b>Total Costs to be Financed</b>	<b>2,894</b>	<b>6,659</b>	<b>9,553</b>	<b>1,491</b>	<b>6,043</b>	<b>7,534</b>	<b>1,453</b>	<b>5,864</b>	<b>7,317</b>

Item	2005			2006			Total		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
<b>A. Fisheries Resources Management</b>									
1. Fisheries Information System	41	29	70	6	5	11	236	178	414
2. CRM Planning and Implementation	34	2,265	2,299	344	950	1,294	1,359	10,431	11,790
3. ICRM in Puerto Princesa	86	180	266	13	131	144	485	1,291	1,776
4. Fisheries Legislation and Regulations	152	107	259	23	17	40	860	649	1,509
5. Community Based Law Enforcement	251	937	1,188	38	808	846	1,412	6,966	8,378
6. MCS Centers	174	272	446	26	98	124	978	2,091	3,069
<b>Subtotal (A)</b>	<b>738</b>	<b>3,790</b>	<b>4,528</b>	<b>450</b>	<b>2,009</b>	<b>2,459</b>	<b>5,330</b>	<b>21,606</b>	<b>26,936</b>
<b>B. Income Diversification</b>									
1. Community Organizing	0	1,792	1,792	392	469	861	492	5,998	6,490
2. Promotion of Microenterprises	272	277	549	41	120	161	1,528	1,836	3,364
3. Support for Mariculture Development	0	699	699	139	163	302	175	2,774	2,949
<b>Subtotal (B)</b>	<b>272</b>	<b>2,768</b>	<b>3,040</b>	<b>572</b>	<b>752</b>	<b>1,324</b>	<b>2,195</b>	<b>10,608</b>	<b>12,803</b>
<b>C. Capacity Building</b>									
1. Strengthening of Institutions	231	180	411	34	61	95	1,315	1,186	2,501
2. Project Management	0	834	834	0	515	515	7	8,678	8,685
<b>Subtotal (C)</b>	<b>231</b>	<b>1,014</b>	<b>1,245</b>	<b>34</b>	<b>576</b>	<b>610</b>	<b>1,322</b>	<b>9,864</b>	<b>11,186</b>
<b>Total Baseline Costs</b>	<b>1,241</b>	<b>7,572</b>	<b>8,813</b>	<b>1,056</b>	<b>3,337</b>	<b>4,393</b>	<b>8,847</b>	<b>42,078</b>	<b>50,925</b>
Physical Contingencies	0	0	0	0	0	0	0	0	0
Price Contingencies	0	0	0	0	0	0	0	0	0
<b>Total Project Costs</b>	<b>1,241</b>	<b>7,572</b>	<b>8,813</b>	<b>1,056</b>	<b>3,337</b>	<b>4,393</b>	<b>8,847</b>	<b>42,078</b>	<b>50,925</b>
Interest During Construction (OCR)	382	0	382	0	0	0	1,970	0	1,970
Interest During Construction (ADF)	94	0	94	59	0	59	318	0	318
<b>Total Costs to be Financed</b>	<b>1,717</b>	<b>7,572</b>	<b>9,289</b>	<b>1,115</b>	<b>3,337</b>	<b>4,452</b>	<b>11,135</b>	<b>42,078</b>	<b>53,213</b>

ADF = Asian Development Fund; CRM = coastal resource management; ICRM = integrated coastal resource management; MCS = monitoring, control and surveillance; OCR = ordinary capital resources.

Source: ADB and Borrower











Activity	Implementation Schedule																																			
	1997				1998				1999				2000				2001				2002				2003				2004				2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
e. BFAR will set up NGO monitoring system.																																				
f. BFAR will contract NGOs:																																				
i. 1st 20 municipalities,																																				
ii. 2nd 20 municipalities, and																																				
iii. remaining 60 municipalities.																																				
g. NGO will recruit and train COs:																																				
i. 1st 20 municipalities,																																				
ii. 2nd 20 municipalities, and																																				
iii. remaining 60 municipalities.																																				
h. COs will conduct social mobilization:																																				
i. 1st 20 municipalities,																																				
ii. 2nd 20 municipalities, and																																				
iii. remaining 60 municipalities.																																				
i. NGO will conduct training/exposure to group leaders:																																				
i. 1st 20 municipalities,																																				
ii. 2nd 20 municipalities, and																																				
iii. remaining 60 municipalities.																																				
j. NGO will conduct training/exposure to LGU:																																				
i. 1st 20 municipalities,																																				
ii. 2nd 20 municipalities, and																																				
iii. remaining 60 municipalities.																																				
k. PMO will train PIU staff on NGO auditing.																																				
l. PIU will audit NGO.																																				





Activity	Implementation Schedule																																							
	1997				1998				1999				2000				2001				2002				2003				2004				2005							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
viii. PMO/PIU will conduct training for BMC members,																																								
ix. BMC will conduct award programs, and																																								
x. BMC will organize study tours.																																								

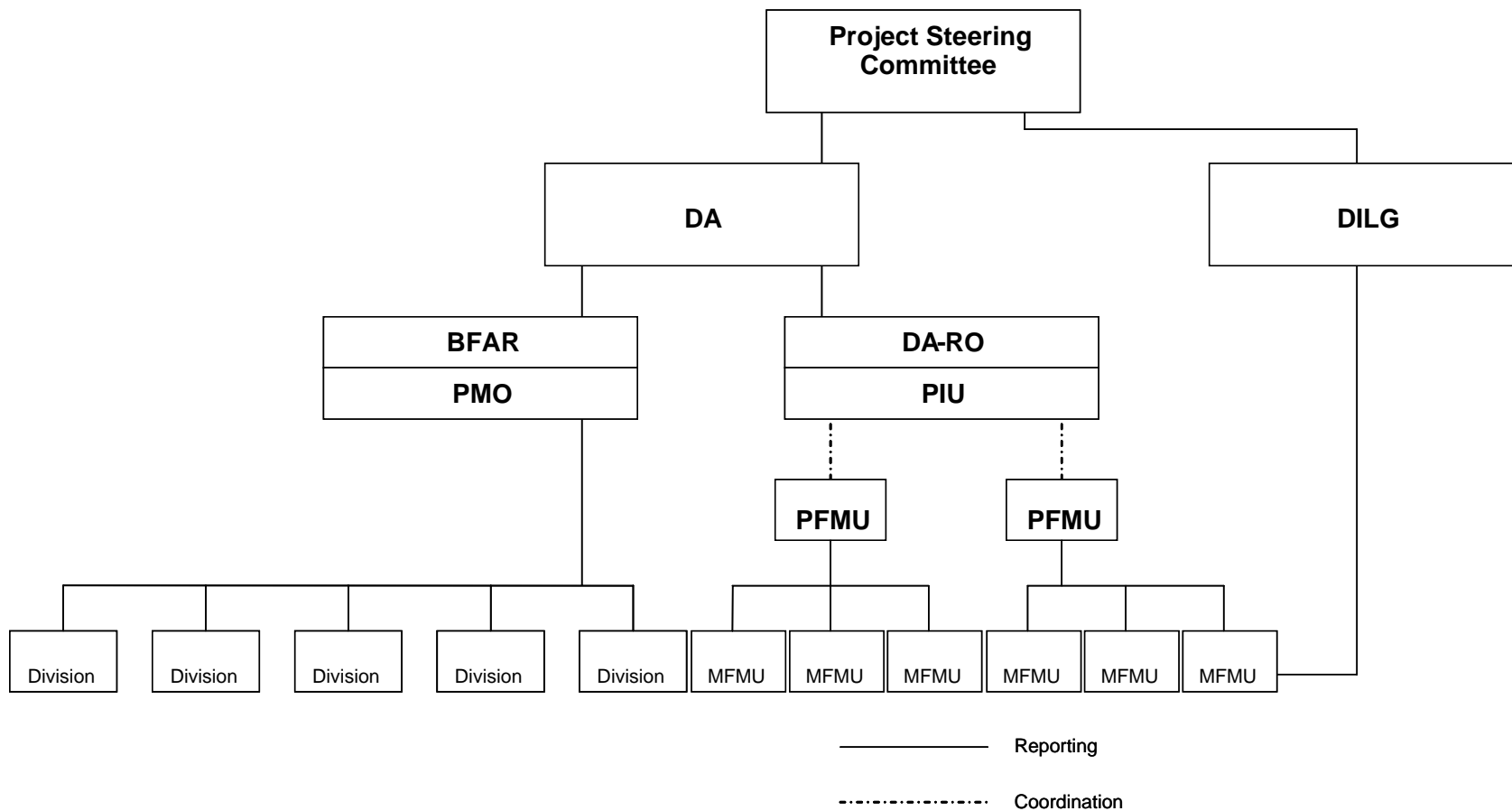
Legend:

 : Planned as per PAM
  : Actual
  : Additional plans

ADB = Asian Development Bank, BFAR = Bureau of Fisheries and Aquatic Resources, CDT = cyanide detection test, CO = Community Organizing, CRM = coastal resource management, FARMC = fisheries and aquatic resources management council, FMU = fisheries management unit, GIS = geographic information system, GOP = Government of the Philippines, IEC = information education campaign, LGU = local government unit, MCS = monitoring, control, and surveillance, MFO = municipal fisheries ordinance, NGO = nongovernment organization, PMO = project management office, PIU = project implementing unit, RI = research institutions, RSA = resource and social assessment

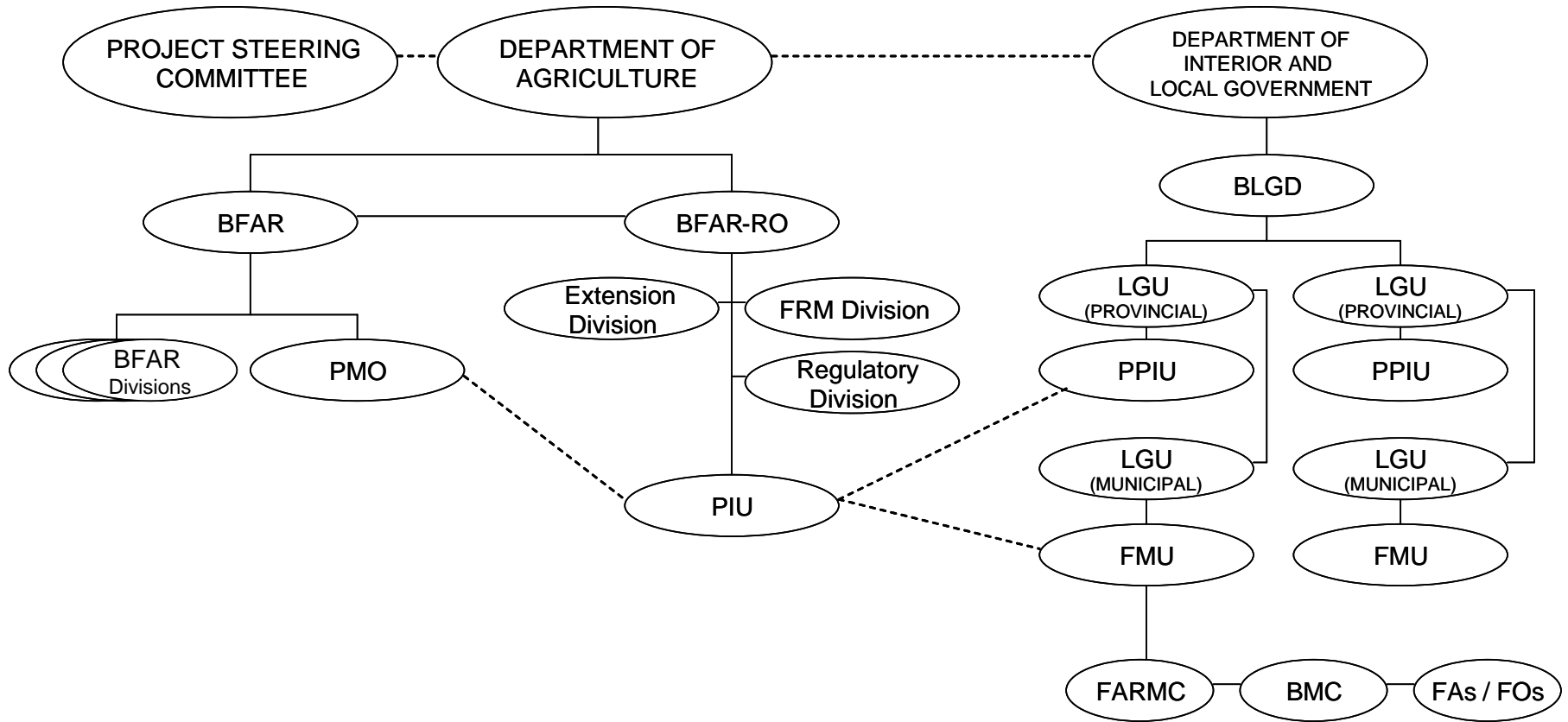
Sources: RRP: PHI 26616 and BFAR Project Completion on the Fisheries Resource Management Project, Philippines, October 2006

**Figure A6.1 Project Implementation Arrangements**  
(as designed during project appraisal)



BFAR = Bureau of Fisheries and Aquatic Resources, DA = Department of Agriculture, DA-RO = Department of Agriculture – Regional Office, DILG = Department of Interior and Local Government, MFMU = Municipal Fisheries Management Unit, PFMU = Provincial Fisheries Management Unit, PIU = project implementation unit, PMO = project management office.

**Figure A6.2: Project Implementation Arrangements**  
 (Actual Arrangements in Accordance with Republic Act (RA) 8550)



BLGD = Bureau of Local Government Development, BMC = Bay Management Council, FAs = fishermen's associations, FMU = Fisheries Management Unit, FOs = fisherfolk organizations, FRM = Fisheries Resources Management, LGU = Local Government Unit, PIU = project implementing unit, PMO = project management office, PPIU = provincial project implementing unit, RO = regional office.

### STATUS OF COMPLIANCE WITH MAJOR LOAN COVENANTS

Covenants and Reference to Loan Agreements	Relevant Date	Responsible Agency	Status
1. Establish a Project Management Office (PMO) within BFAR to be headed by a Project Director and to be staffed with adequate number of qualified personnel (Schedule 6, para. 1)	Prior to Loan effective date	DA	Complied with. FRMP PMO was constituted on 13 March 1998 by DA through a Special Order. The total number of personnel contracted under the Project was 17. Additional 17 permanent personnel were designated by BFAR to the Project. Of this number, 5 were actively involved in Project implementation.
2. Establish a Project Implementation Unit (PIU) in each DA-RO to be headed by the Assistant Regional Director for Fisheries, and a Fisheries Management Unit in each of the 20 LGUs to be included in the first year of Project Implementation (Schedule 6, para.2)	Prior to Loan effective date	DA, PMO	Complied with. PIUs established in Regions 1, 4, 5, 6, 8,9,10, 11, 12, and 13. With the enactment of RA 8550, BFAR established its own Regional Offices. The BFAR-RO Directors head the PIUs. Cities municipalities with MOAs with the Project have established FMUs.
3. Establish a Project Steering Committee (PSC) chaired by the DA Undersecretary for Fisheries and compromised of senior officials from NEDA, DOF, DBM, DA Planning, DILG, DENR, and the Directors of BFAR and PMO (Schedule 6, para.3)	Immediately after Loan effective date	DA	Complied with. Special Order 493 dated 13 September 1999 creating the PSC was signed by DA Secretary Edgardo J. Angara. The PSC has been convened periodically since 1999 to discuss Project issues and concerns as well as review the status of Project implementation.
4. Ensure regular and timely release of adequate counterpart funds for Project activities and budgetary allocations during Project implementation to PhilFIS, BAS, and CDT laboratories to sustain full-scale operations (Schedule 6, para. 4)	For the entire period of Project Implementation	DBM, DA	Complied with.
5. Ensure that appropriate regulations are issued by concerned departments that require CDT prior to	By expiry of project implementation period	DA, BFAR	Complied with. BFAR requires testing of live fish for cyanide prior to issuance of Permit to Export Live Fish

Covenants and Reference to Loan Agreements	Relevant Date	Responsible Agency	Status
exportation of any live fish (Schedule 6, para. 5)			
6. Ensure that each LGU has executed a MOA with DA-RO and provincial government concerned (Schedule 6, para.6)	At least three months prior to the participation of the LGU in the Project	PMO	Complied with. MOAs were signed with 100 cities and municipalities.
7. Ensure that LGUs are provided with adequate levels of staff training by the DA-ROs concerned in CRM planning and implementation, information and education campaigns, prudent use of resources for community organization and promotion of enterprises, development of effective fisheries law enforcement, and establishment of municipal fishing licensing system (Schedule 6, para 7)	For the entire period of Project Implementation	PMO	Complied with.
8. Ensure that (i) necessary regulations to implement a revised commercial fishing licensing system have been issued; and (ii) moratorium on the issuance of new licenses for commercial vessels less than 250 gross registered tons has been (Schedule 6, para. 8)	By 30 June 1998 and 31 October 1998 respectively	DA, BFAR	Complied with. A Fisheries Administrative Order (FAO) on the moratorium on the issuance of new licenses for commercial vessels less than 250 gross registered tons (grt) had been issued. The EA has completed the design of commercial fishing licensing system and had commenced populating the system's database.
9. Implement an action plan which will include: (i) a detailed training program; (ii) a project performance in management system; (iii) project accounting and auditing systems; (iv) selection criteria for NPOs and research institutions; and (v) detailed work programs for PMO, PIUs and FMUs for the first year of Project implementation (Schedule 6, para.9)	31 March 1998	PMO	Complied with.
10. Ensure that municipal fisherfolk are organized to participate in Project implementation, designated	For the entire period of Project implementation	PMO	Partly complied with. Gender training was only done at the PMO level.

<b>Covenants and Reference to Loan Agreements</b>	<b>Relevant Date</b>	<b>Responsible Agency</b>	<b>Status</b>
fisherfolk are trained as fish wardens, women are organized to participate in Project implementation, and gender training provided to all Project staff. (Schedule 6, para.11)			
11. Ensure timely selection of the required number of LGUs for Project participation in accordance with criteria agreed with the Bank (Schedule 6, para 12)	For the entire period of Project implementation	PMO	Complied
12. Ensure that the selected LGUs will provide local counterpart contributions (cash or in kind) to finance project costs in accordance with the cost-sharing scheme agreed between the Borrower and the Bank (Schedule 6, para. 13)	Prior to Project implementation in the selected LGUs	PMO	Complied with. Cost-sharing scheme was agreed during the MOA negotiation. LGU counterpart contributions were monitored regularly.
13. Ensure that the PMO, each PIU and FMU will establish separate project accounts to be maintained exclusively for Project activities (Schedule 6, para. 14)	For the entire period of Project Implementation	DA-BFAR	Complied with. Separate project accounts were established by BFAR-FRMP-PMO and participating BFAR regions
14. Make available required funds, facilities, services and other resources in addition to the proceeds of the Loan and the OECF Loan for the carrying of the Project, including operation and maintenance of the Project facilities (LA-ADF Section 4.02)	For the entire period of Project Implementation	DA-BFAR	Complied
15. Employ competent and qualified consultants acceptable to the Borrower and the Bank upon terms and conditions satisfactory to the Borrower and the Bank (LA-ADF, Section 4.03)	For the entire period of Project Implementation	PMO	Complied with. The Project Management Consulting firm was engaged using ADB Loan Funds after ADB approval. The services had been completed
16. Maintain separate accounts, have such accounts and related financial statements	Not later than 12 months after the end of each related	PMO	Complied with. Separate project accounts were established by BFAR CO and

<b>Covenants and Reference to Loan Agreements</b>	<b>Relevant Date</b>	<b>Responsible Agency</b>	<b>Status</b>
audited annually and furnish the Bank copies of the audited reports (LA-ADF, Section 4.06 (b)).	fiscal year		BFAR ROs 1, 4, 5, 6, 8, 9, 10, 11, 12 and 13
17. Furnish the Bank quarterly reports on Project implementation and management [LA-ADF, Section 4.07(b)]	Within one month after end of each quarter for entire period of the Project	PMO	Complied with. ADB was furnished regular Quarterly Progress Reports following the Bank's prescribed format.
18. Submit to the Bank the Project Completion Report [LA-ADF, Section 4.07 (c)].	Not later than three months after Project completion	PMO	Complied with. Submitted report together with the Impact Evaluation Study

**PERSON-MONTHS OF SPECIALISTS PROVIDED BY THE PROJECT MANAGEMENT CONSULTING TEAM**

<b>Specialist</b>	<b>Original Contract June 1999–May 2002</b>	<b>Supplemental and Contract Variations June 1999 – October 2002</b>		<b>Actual Person-Months Allocated</b>	<b>Actual Person-Months Used</b>
		<b>Supplemental Contract</b>	<b>Various Contract Variations</b>		
Fisheries Resource Management Specialist/ Team Leader	36		5	41.00	40.52
Institutional Development Specialist	36		0	36.00	33.21
Community Development Specialist	36		0	36.00	35.70
Regional Adviser	36		5	41.00	40.33
Regional Adviser	36		5	41.00	40.46
Regional Adviser	36		5	41.00	40.32
Regional Adviser	36		5	41.00	41.00
Regional Adviser	36		5	41.00	40.15
Boat Design Specialist			6	6.00	6.00
Financial Management Specialist		9	0	9.00	6.79
Computer Specialist		12	0	12.00	14.39
Enterprise Development Specialist		6	6	12.00	12.00
HRD/Training Specialist		18	1	19.00	16.45
Institutional Relations Specialist		12	0	12.00	0.00
Additional Regional Adviser		24	0	24.00	16.00
<b>Total</b>	<b>288</b>	<b>81</b>	<b>43</b>	<b>412.00</b>	<b>383.32</b>

Source: BFAR Project Completion Report on the Fisheries Resource Management Project, Philippines, October 2006.

## PROCURED EQUIPMENT UNDER ADB LOAN

Year Acquired	Quantity	Particulars	Amount (P)	User/Agency
2000	3 units	vehicle	1,509,000.00	BFAR CO
	10 units	desktop computer	707,990.00	BFAR RO (1,4,5,6,8)
	10 units	printer	212,890.00	BFAR RO (9,10,11,12,13)
	2 units	notebook computer	300,894.00	BFAR RO (1,4,5,6,8)
	1 unit	notebook computer	141,500.00	BFAR RO (9,10,11,12,13)
	10 units	exhibit panel	1,348,295.40	BFAR FRMP PMO
	3 units	motorcycle	209,040.00	BFAR FRMP PMO
	3 sets	SCUBA equipment	145,979.73	BFAR RO (1,4,5,6,8)
		<b>Subtotal</b>	<b>4,575,589.13</b>	BFAR RO (9,10,11,12,13)
				BFAR FRMD
2001	10 units	digital duplicator	1,944,790.80	BFAR RO (1,4,5,6,8)
	1 unit	multimedia projector	340,000.00	BFAR RO (9,10,11,12,13)
	11 units	multimedia projector	2,893,000.00	BFAR FRMP PMO
	2 units	motorcycle	144,016.00	BFAR RO (1,4,5,6,8)
	9 units	airconditioner	338,240.00	BFAR RO (9,10,11,12,13)
	1 unit	facsimile machine	18,876.00	BFAR RFTC Palawan
		<b>Subtotal</b>	<b>5,678,922.80</b>	BFAR RO 4
2002	14 units	digital camera	475,995.52	BFAR FRMP PMO
	1 unit	DLP projector	250,000.00	BFAR RO (1,4,5,6,8)
	10 units	notebook computer	1,177,352.80	BFAR Director's Office
	45 units	various software	1,293,116.22	BFAR RO (1,4,5,6,8)
	12 units	video camera	755,026.20	BFAR RO (9,10,11,12,13)
	24 units	VHS player/recorder	356,900.64	BFAR FRMP PMO
	11 units	UVW casing	1,318,744.90	BFAR RO (1,4,5,6,8)
			BFAR RO (9,10,11,12,13)	
			BFAR RFTC Palawan	

Year Acquired	Quantity	Particulars	Amount (P)	User/Agency
		<b>Subtotal</b>	<b>5,627,136.28</b>	BFAR FRMP PMO
2002	36 units	desktop computer	4,076,062.20	BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13) PPC Provincial Office
	26 units	deskjet printer	202,425.86	BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13) PPC Provincial Office
	12 units	scanner	475,471.80	BFAR FRMP PMO BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13) PPC Provincial Office
	11 units	laserjet printer	632,363.27	BFAR FRMP PMO BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13)
	11 units	CD rewritable drive	79,337.17	BFAR RFTC Palawan BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13)
	12 units	zip drive	108,544.56	BFAR RFTC Palawan BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13) BFAR RFTC Palawan
		<b>Subtotal</b>	<b>5,574,204.86</b>	BFAR FRMP PMO
2003	3 units	portable copier	58,000.00	BFAR FRMP PMO
2004	2 units	digital copier	700,000.00	BFAR FRMP PMO
	13 units	multimedia projector	1,352,000.00	BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13) BFAR RFTC Palawan
	12 units	exhibit panel	2,079,168.00	BFAR FRMP PMO BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13) BFAR RFTC Palawan
	23 units	desktop computers	2,579,994.64	BFAR FRMP PMO BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13) BFAR Director's Office
	17 units	notebook computer	2,013,199.33	BFAR FRMP PMO BFAR IPRG BFAR FRMD BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13) DA Undersecretary's Office DA Planning Office BFAR FRMP PMO

<b>Year Acquired</b>	<b>Quantity</b>	<b>Particulars</b>	<b>Amount (P)</b>	<b>User/Agency</b>
	12 units	laserjet printer	296,116.20	BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13)
	12 units	office jet printer	235,823.88	BFAR FRMP PMO BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13)
	14 units	video conference camera	85,125.60	BFAR FRMP PMO BFAR RO (1,4,5,6,8) BFAR RO (9,10,11,12,13)
		<b>Subtotal</b>	<b>9,341,427.65</b>	BFAR FIMC BFAR FRMP PMO BFAR IPRG
		<b>Total</b>	<b>30,855,280.72</b>	

Source:BFAR Project Completion Report on the Fisheries Resource Management Project, Philippines, October 2006.

### INCOME DATA FROM CAPTURE FISHING IN SELECTED PROJECT SITES

1. A goal of the Project was to reduce the incidence of poverty in project sites by promoting conservation and sustainable management of coastal resources to reverse the trend of fisheries resource depletion in municipal waters. Table A10.1 shows that the post-project research and social assessments (RSAs) conducted in selected gulfs and bays covered by the Project indicate an increase in household income from capture fisheries. Based on the baseline data gathered in the selected bays and gulfs in 2000 and 2002, an income increase of 13% to 89% was experienced by fishing households.

**Table A10.1: Fishing Incomes of Selected Project Gulfs and Bays – Baseline Data and Post-RSA (2005)**

Project Site (Gulf/Bay)	Household Income from Capture Fisheries (P)		Annual Increase (P)	Monthly Increase (P)	Average Increase from 2000– 2002 to 2005 (%)
	Baseline (2000–2002)	Post-RSA (2005)			
Ragay Gulf	30,618	45,237	14,619	1,218	48
Davao Gulf	45,656	52,652	6,996	583	15
Lagonoy Gulf	20,258	38,258	18,000	1,500	89
Sapian Bay	51,299	57,968	6,669	556	13

Sources: RSAs of Ragay Gulf, Davao Gulf, Lagonoy Gulf and Sapian Bay; PMO's impact assessment (2005).

**Table A10.2: Annual Fishing Income of Selected Provinces after Project Completion in Relation to Annual Per Capita Poverty Threshold and Annual Per Capita Food Threshold (2005)**  
(P)

Project Site (Gulf/Bay and Province)	Annual Per Capita Poverty Threshold - Rural	Annual Per Capita Food Threshold - Rural	Annual Average Income from Capture Fishing	Annual Per Capita Income from Capture Fishing
Ragay Gulf				
Quezon	14,562	9,765	40,206	6,382
Camarines Norte	12,675	8,743	43,522	7,135
Davao Gulf				
Davao del Norte	14,074	9,883	56,000	11,200
Davao Oriental	11,933	8,968	52,800	10,560
Lagonoy Gulf				
Albay	13,360	9,082	38,258	7,329
Sapian Bay				
Aklan	13,321	9,364	52,541	8,916
Capiz	12,454	8,663	40,307	6,902

Sources: National Statistical Coordination Board (NCSB) poverty statistics and the PMO's impact assessment (2005).

2. However, when the annual average incomes from fishing are computed to determine the annual per capital income<sup>1</sup>, the majority of the sample provinces are shown to have annual per capita incomes below the Annual Per Capita Food Threshold for 2005, with the exception of

<sup>1</sup> Annual per capita income is computed by dividing the annual income by the number of household members.

Davao Gulf provinces (Table A10.2). The food threshold is the amount needed by the individual to cover food expenses in order to survive. Individuals who have less than this amount are classified as food poor.

3. The income considered in computing the annual per capita income relates only to capture fishing activities. Most of the fishing households, as indicated in the research and social assessments, have additional or secondary sources of income such as coconut farming, raising livestock, pigs and poultry, rice farming, fish processing and seasonal jobs as pedicab drivers, carpenters, agricultural workers and masons (during the lean season for fishing). If the incomes generated from these jobs are added to people's incomes from capture fishing, it is likely that the annual per capita income of household members will be slightly lower, within, or slightly higher than the food poverty threshold estimated for their areas and provinces. Nonetheless, the increase in incomes that resulted from the Project's various interventions in conservation and protection of municipal fisheries have prevented fishing households sliding further into poverty.

## FINANCIAL AND ECONOMIC ANALYSES

### A. Introduction

1. An evaluation of the financial analysis of representative microenterprise projects and the economic analysis of the Project as a whole were carried out. The analyses were based on information obtained from field visits by the project completion review mission, together with secondary data from project reports (RRP, accomplishment reports, research and social assessments, impact evaluation reports and the ADB midterm review mission report) the World Bank and government agencies such as the National Economic Development Authority (NEDA), Department of Trade and Industry (DTI) and the Bureau of Agricultural Statistics (BAS). For analysis of microenterprise projects, technical data and cost and returns figures were taken from financial statements submitted by the microenterprise proponents or fishers' associations, or updated input and output price information from key informants or the proponents.

#### 1. Financial Analysis

2. Financial analysis of six microenterprises established by fishers' associations and cooperatives under the Project was conducted to determine the financial viability of the Project's income diversification component. Five of the six microenterprise projects were among the predominant alternative livelihood projects introduced in the project areas. These include seaweed culture, milkfish deboning, mudcrab culture, grouper cage culture and milkfish cage culture. Although nine fishers' associations are engaged in a swine fattening project, financial analysis of this enterprise was also assessed because it was one of the microenterprises covered during the Project's appraisal stage. Other representative enterprises included in the financial analysis at appraisal were seaweed culture, milkfish cage culture and mudcrab fattening.

3. Financial analysis for each enterprise covered a period of 11 years, comprising an establishment of one year and an operation period of 10 years. The cost items considered in financial analysis included investment costs and annual operating expenses. For each representative microenterprise, costs and returns and financial cash-flow statements were prepared to generate the financial indicators (Tables A11.1–A11.6).

4. Annual gross revenue of each microenterprise project was computed by multiplying the production volume for each year by the price of the output (ex-farm price). Projected annual gross revenues of each microenterprise from year 1 to year 11 were estimated based on constant 2006 prices. The annual net income of each microenterprise from year 1 to year 11 was calculated by subtracting total operating cost in each year from the corresponding annual gross revenue.

5. Results of the financial analysis show that all six microenterprises are highly financially viable, with financial internal rates of return (FIRRs) ranging from 44% to 72%, which are above the cost of microcredit of 24% (Table A11.7). The net present values (NPVs) estimated for each of the microenterprise projects are all positive (NPV>0), indicating that these are financially viable livelihood projects. Swine fattening, seaweed culture and grouper cage culture have the highest FIRR values. Milkfish cage and grouper cage culture have the largest NPVs among the representative microenterprises while swine fattening exhibited the lowest NPV. The capital requirements of swine raising, seaweed culture, mudcrab fattening, and milkfish deboning are relatively lower than those of grouper

cage culture and milkfish cage culture. Apart from the fishers' associations and cooperatives, even some households in the project sites are engaged in these microenterprises since they are affordable to them.

6. Sensitivity analysis was undertaken to determine the effects of (i) a 10% increase in variable costs, and (ii) a 10% decrease in gross revenue. The estimated sensitivity indicators (SIs) are all greater than 1.0, suggesting that the FIRR values of each microenterprise were highly elastic or sensitive to the changes in variable costs and gross revenue (Table A11.8). The higher SIs obtained for the 10% change in gross revenue as compared to the same percentage change in variable costs indicate that the FIRR of each microenterprise project is more sensitive to a reduction in gross revenue than to an increase in variable costs.

7. Applying the switching values technique in sensitivity analysis, Table A11.9 shows that except for seaweed culture, only small changes in variable costs and gross revenues will allow the representative microenterprise projects to maintain an FIRR equal to 24% (or NPV = 0).

## 2. Economic Analysis

8. Economic analysis of the Project was conducted covering a period of 20 years starting in 1999 to measure the economic impact of the Project on the national economy using EIRR and NPV as measures of project worth. Comparison of the Project's viability with and without the project was used in economic analysis.

9. **Project costs.** All project investment and operating costs excluding import duties, taxes and interest by source of funding (i.e., ADB-OCR, ADB-ADF, JBIC, the Government and local government units) were disaggregated into their foreign and local currency components (Tables A11.10–A11.17). The dollar and local cost streams were first adjusted to constant 2006 base prices using the dollar deflator (manufacturing unit value index or MUV obtained from the World Bank) and a domestic deflator (the consumer price index or CPI in the Philippines estimated by National Economic Development Authority (NEDA), respectively). The adjusted foreign exchange cost components were then expressed in economic terms in local currency using a shadow exchange rate of P61.57<sup>1</sup> to US\$1.00. All local currency costs were economic values following their financial values, except for unskilled labor in microenterprise projects whose wages were adjusted by a conversion factor of 0.60. The summary of the annual economic costs by type and source of financing is presented in Table A11.18. In the analysis, it was assumed that the Government and the local government units would continue providing funds for the maintenance of the resource enhancement projects (REPs) and fisheries law enforcement activities of the fisheries law enforcement teams and the coast watch teams from 2006 to 2018.

10. **Project benefits.** In estimating project benefits in economic analysis, the economic price of fish was first estimated. Although fish is both an exportable commodity and an import substitute, fish in this analysis was treated as an import substitute. For this purpose, the import price of fish was used and adjusted to its ex-vessel price consistent with ADB's *Guidelines for Economic Analysis*. The FOB price of fish in 2006 used for the economic analysis was obtained from the Department of Trade and Industry (DTI). This FOB price is lower than that used at project appraisal due to the declining price of fish in the world

<sup>1</sup> Derived by multiplying the official exchange rate in 2006 of P51.31 by the shadow exchange rate factor of 1.20.

market. Nevertheless, the resulting ex-vessel economic price of fish in 2006 (P38.30/kg) shown in Table A11.19 is higher than that estimated at appraisal (P22.28/ton) owing to the higher shadow exchange rate in 2006 (i.e., P61.57:\$1.00) as compared to P32.08:\$1.00 in 1996.

11. Economic benefits derived from the Project consisted of incremental net benefits from (i) the establishment of fish and marine sanctuaries, (ii) improved law enforcement and licensing, (iii) control of destructive and illegal fishing, and (iv) mangrove reforestation and rehabilitation. Economic valuation of these project benefits is discussed below.

12. **Benefits from fish and marine sanctuaries.** Benefits from fish and marine sanctuaries were measured in terms of increases in fish biomass (i.e., the number of individual fish per hectare). The average fish biomass within the established fish and marine sanctuaries or the no-take zones in the 18 bays covered by the Project at the start of the Project in 1999, based on data reported in RSAs in these bays, was 0.294 tons (t) per hectare (ha). The total area of fish and marine sanctuaries established under the Project was 2,458 ha. Based on these data, the estimated baseline fish biomass for all the established fish sanctuaries and marine reserves in 1999 was 722 t. Multiplying the baseline total fish biomass figure by the estimated economic price of fish (P38,197/t), the total value of fish biomass in the fish and marine sanctuaries under the Project would be PhP27.58 million in 1999. Annual fish biomass figures from 2000 to 2005 under the “with project” situation were estimated based on the annual growth rates in fish biomass provided by the BFAR project management office (PMO), which were derived from data collected from the conduct of RSAs and the impact evaluation study (i.e., 2000 – 1.2%; 2001 – 1.7%; 2002 – 2.4%; 2003 – 2.9%; 2004 – 3.2%; and 2005 – 5.1%). Annual fish production figures from 2006 to 2018 were projected based on an average annual growth rate of 2.75% (Table A11.20).

13. Using the same assumption applied at project appraisal and the ADB midterm review, fish biomass under the “without project” situation was projected to decline in all the 18 bays at an average annual rate of 2.6% from 1999 to 2018 (Table A11.20). Economic values of the projected fish biomass under the “with” and “without project” situations were derived by multiplying the annual projected fish biomass in each year by the 2006 economic price of fish. Incremental annual gross benefits from the establishment of fish and marine sanctuaries were calculated by getting the difference between the annual gross benefits from fish biomass with the project and the annual gross benefits from fish biomass without the project.

14. **Benefits from increased fish production due to enhanced habitats (e.g, coral reefs).** One of the project benefits is the increase in bay-wide fish catch or production due to improved habitat.

15. Actual data on fish production in 1999 in the 18 bays covered by the Project, provided by the BFAR PMO and based on RSA reports, was 130,553 t. This figure was much lower than that used at appraisal and the ADB midterm review (i.e., 578,000 t) since the latter was based on national fish production data. Using the same assumption at appraisal under the “without project” situation, annual fish production from 2000 to 2018 was projected to decline by 2.6% (Table A11.21).

16. In view of the delay in implementing the Project and the passage of local fisheries ordinances that no fishing would be allowed near fish and marine sanctuaries and mangrove

areas for about three years since their establishment, it was assumed under the “with project” situation that annual fish production (or fish catch) in all the bays would decline by 2.6% from 1999 to 2000 and 1.9% from 2000 to 2001 (Table A11.21). These rates of decline in fish production were the same values used during the project appraisal stage and the ADB midterm review. Starting in 2002, an increasing trend in fish production in the 18 bays was applied in economic analysis. This is contrary to the assumption at appraisal that fish production with the Project would continue to decline but at a slower rate, from 2.6% to 1.9%. For purposes of economic analysis, the annual growth rates applied from 2002 to 2005 (i.e., 0.8% in 2002; 1.2% in 2003; 1.6% in 2004; and 2.1% in 2005) were based on RSAs and the BFAR impact evaluation study. These are conservative estimates since these were based mainly on perceptions of the fisher respondents. Annual fish production figures from 2006 to 2018 were projected based on an average annual growth rate of 0.20%. The incremental gross benefits from increased fish production were determined by multiplying the incremental fish production by the 2006 economic price of fish.

**17. Benefits from reduced destructive and illegal fishing.** Based on anecdotal information, the mission noted that strict enforcement of fisheries regulations and licensing has resulted in the abatement of the rate of decline in fish catch. Using the data provided by the BFAR PMO, which was based on RSA results, the annual volume of fish production attributed to destructive and illegal fishing activities in 1999 was 6,528 t, which accounted for 5% of the total fish production or fish catch in the 18 project bays. Using the same assumption at appraisal, fish harvest without the Project will continue to decline by 2.6% per annum from 1999 to 2018. Due to the delay in the commencement of the Project (1999 instead of 1998) and the implementation of fisheries law enforcement activities, the rate of reduction in the incidence of destructive fishing activities was expected to start to increase in year 4 (2002) instead of year 2 (2000), as was envisioned during the appraisal stage. In the appraisal and midterm review, it was also projected that destructive and illegal fishing activities under the “with project” situation would be substantially reduced by year 11 (2009) and year 12 (2010). However, based on recent interviews with fishers, the mission noted that the reduction in destructive and illegal fishing activities owing to effective implementation of fisheries law enforcement and licensing interventions has significantly increased at present, that is, even before 2009 or 2010 (as high as 80% in Davao Gulf and 100% in Batan municipality in Sapijan Bay). In the economic analysis for the “with project” scenario, it was therefore assumed that the reduction in destructive and illegal fishing activities would be markedly reduced by 50% starting in 2007 compared with the 1999 level. This indicates that the volume of annual fish production in the 18 project bays will be reduced earlier than expected to about 2.5% of the total fish production in these bays starting in 2007. Given these assumptions, the annual volume of fish saved from destructive and illegal fishing was projected as shown in Table A11.22 and these figures were multiplied by the 2006 economic price of fish to derive the incremental gross benefits from destructive and illegal fishing.

**18. Benefits from mangrove reforestation and rehabilitation.** The total mangrove area established by the Project was 25,083 ha. Using time-series data provided by BFAR, it was estimated that the total mangrove area in the 18 project bays declined by 1.05% annually from 1985 to 1996. Under the “without project” scenario, it was assumed that the mangrove areas from 1999 to 2018 would continue to exhibit the same negative trend. Hence, it is expected that with the reduction in mangrove areas, the total economic value of fish production derived from these areas would also decline (Table A11.23).

19. Under the “with project” situation, it was assumed that the mangrove areas will also exhibit a declining trend, but at a slower rate (i.e., 50% of the annual rate of decline without the Project or 0.52% per year). The projected mangrove area saved from degradation with the Project per year was estimated by subtracting the mangrove area under the “without project” scenario from the mangrove area under the “with project” scenario. The incremental net benefits from the projected mangrove area saved as a result of fisheries resource management interventions were determined by using the estimated 2006 economic price of P36,160 per hectare. The latter was derived from the economic valuation of fish production from mangrove areas in good condition based on the study conducted by White and Cruz-Trinidad in 1998, which was expressed in 2006 economic terms.

20. In addition to benefits derived from improved mangrove management and protection, benefits can also be obtained from mangrove rehabilitation and reforestation in the project area. About 1,300 ha of mangrove area were rehabilitated or reforested under the Project. Since it takes a long gestation period for mangroves to attain maturity, it was assumed in the economic analysis that incremental benefits from mangrove rehabilitation and reforestation would begin in 2005 until 2018. One hectare of reforested or rehabilitated mangrove forest was valued at P21,696/ha in 2006 economic terms, or about 60% of the estimated economic value of fish production of mangrove since rehabilitated or reforested mangrove areas would attain about 60% of their original condition or value (White and Cruz-Trinidad, 1998). Table 23 shows the projected mangrove area saved from degradation with the Project and the projected mangrove area reforested and rehabilitated under the Project.

21. **Results of economic analysis.** Despite delays in realizing project benefits due to delays in implementing some project activities (e.g., increase in fish catch due to the reduced incidence of destructive and illegal fishing), the Project has generated higher levels of net economic benefits compared to the total net benefit estimates at project appraisal. This is mainly due to (i) the increase in the economic price of fish that raised the total benefits of the Project; (ii) the lower actual total project cost (US\$54.597 million) compared with the approved project cost of US\$88.456 million; and (iii) the increasing trend in fish catch, which was not anticipated at appraisal. As shown in Table A11.24, the Project will generate an EIRR of 30.72%, which is higher than the 21% and the 26% arrived at during the appraisal stage and the midterm review, respectively. The Project’s EIRR of 30.72% is higher than the social opportunity cost of capital. At a discount rate of 15%, the resulting NPV indicates that the Project is expected to generate P2,030 million for the economy.

22. Sensitivity analysis was conducted to ascertain the effects of potential changes of project costs and benefits on its economic viability (Table A11.25). The following risk scenarios were evaluated: (i) an increase in total project cost by 10% and 20%; (ii) an increase in operation and maintenance costs by 10% and 20%; (iii) an increase in project investment cost by 10% and 20%; (iv) a decrease in benefits from fish reserves and marine sanctuaries by 10% and 20%; (v) a decrease in benefits from destructive and illegal fishing by 10% and 20%; (vi) a decrease in fish catch and production by 10% and 20%; (vii) a decrease in benefits from mangrove reforestation and rehabilitation by 10% and 20%; (viii) a decrease in total project benefits by 10% and 20%; and (ix) a simultaneous decrease in total project benefits and an increase in total project cost by 10% and 20%. Results of the sensitivity analysis show that the Project will remain economically viable even with substantial adverse variations in project costs and benefits. The SI values obtained for all the afore-mentioned changes are less than 1.0, implying that the recalculated EIRRs are insensitive to variations in project costs and benefits. The switching values technique was also applied in sensitivity analysis and the figures indicate that even with large changes in

costs and benefits, the Project will be able to maintain an EIRR equal to 15% or the social opportunity cost of capital.

23. **Poverty impact ratio analysis.** The distribution of benefits and costs among the various project stakeholders was determined based on calculations of incremental benefits and costs in the conduct of the financial and economic valuation of incremental benefits from fisheries resource management interventions and alternative livelihood projects. All financial and economic benefits and costs were expressed in 2006 prices and expressed in present value terms at a discount rate of 15% (Table A11.26). Incremental benefits were distributed among coastal communities, municipal government and other sectors in the municipal economy, and the national government and economy. Incremental benefits from the establishment of fish sanctuaries and marine reserves, reduced destructive and illegal fishing, improved fish production, and mangrove management and rehabilitation were distributed as follows: coastal community, 50%; municipal government and other sectors in the municipal economy, 30%; and national government and economy, 20%. The difference between the financial and economic present values of incremental cost is viewed as a cost to the Government and local government units. Benefit distribution analysis resulted in a poverty impact ratio of 0.67, indicating that the poor in all subsectors of the economy have realized a greater share (67%) of the total net benefits generated by the Project

Table A11.1: Financial Cash Flow – Income Diversification Project: Seaweed Culture (0.25 hectare)

Item	Unit	Quantity	Price (P)	Revenues and Expenses (P)										
				Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>1. Investment</b>														
Bamboo raft and flat boat	unit	1	13,550	13,550		5,000		5,000		5,000		5,000		5,000
Labor	amount	1	9,500	9,500										
Materials	amount	1	40,000	40,000										
Buoys/sand bags				5,000										
<b>Total investment</b>				<b>68,050</b>		<b>5,000</b>		<b>5,000</b>		<b>5,000</b>		<b>5,000</b>		<b>5,000</b>
<b>2. Operation and Maintenance Costs</b>														
Labor	person-month	12	1000		12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Planting materials	kg	510	10		5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100
Straw and rope	amount	1	10,500		10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500
Bamboo baskets	piece	10	100		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Miscellaneous cost	amount	1	1,660		1,660	1,660	1,660	1,660	1,660	1,660	1,660	1,660	1,660	1,660
<b>Total variable costs</b>					<b>30,260</b>	<b>30,260</b>	<b>30,260</b>	<b>30,260</b>	<b>30,260</b>	<b>30,260</b>	<b>30,260</b>	<b>30,260</b>	<b>30,260</b>	<b>30,260</b>
<b>3. Revenue</b>														
Seaweed	kg	2,475	30		74,250	74,250	74,250	74,250	74,250	74,250	74,250	74,250	74,250	74,250
<b>4. Total revenue</b>					74,250	74,250	74,250	74,250	74,250	74,250	74,250	74,250	74,250	74,250
<b>5. Net income before tax</b>				(68,050)	43,990	38,990	43,990	38,990	43,990	38,990	43,990	38,990	43,990	38,990
<b>6. Tax</b>	10%				4,399	3,899	4,399	3,899	4,399	3,899	4,399	3,899	4,399	3,899
<b>7. Net income after tax</b>				(68,050)	39,591	35,091	39,591	35,091	39,591	35,091	39,591	35,091	39,591	35,091
<b>FIRR</b>	<b>55%</b>													
<b>NPV (24%) =P</b>	<b>56,711</b>													

FIRR = financial internal rate of return; NPV = net present value.

Sources: Financial statements of fishers' associations and Financial Analyst/Economist's estimates.

**Table A11.2: Financial Cash Flow - Income Diversification Project: Milkfish Deboning**

Item	Unit	Quantity	Price (P)	Revenues and Expenses (P)										
				Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>1. Investment</b>														
Freezer and deboning kit	freezer	1	30,000	30,000										
Labor	amount	1	6,000	6,000										
Small tools and equipment	amount	1	11,500	11,500										
Contingencies (5%)				2,375										
<b>Total investment</b>				<b>49,875</b>										
<b>2. Operation and Maintenance Costs</b>														
Labor	per pc of milkfish	2,220	5		11,100	11,100	11,100	11,100	11,100	11,100	11,100	11,100	11,100	11,100
Raw fish	Kg	450	70		31,500	31,500	31,500	31,500	31,500	31,500	31,500	31,500	31,500	31,500
Utilities	amount	1	1,188		1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188
Oil, seasoning, and spices	amount	1	1,946		1,946	1,946	1,946	1,946	1,946	1,946	1,946	1,946	1,946	1,946
Miscellaneous cost	amount	1	3,463		3,463	3,463	3,463	3,463	3,463	3,463	3,463	3,463	3,463	3,463
<b>Total variable costs</b>					<b>49,197</b>	<b>49,197</b>	<b>49,197</b>	<b>49,197</b>	<b>49,197</b>	<b>49,197</b>	<b>49,197</b>	<b>49,197</b>	<b>49,197</b>	<b>49,197</b>
<b>3. Revenue</b>														
Deboned milkfish	Pack	740	100		74,000	74,000	74,000	74,000	74,000	74,000	74,000	74,000	74,000	74,000
<b>4. Total revenue</b>					<b>74,000</b>	<b>74,000</b>	<b>74,000</b>	<b>74,000</b>	<b>74,000</b>	<b>74,000</b>	<b>74,000</b>	<b>74,000</b>	<b>74,000</b>	<b>74,000</b>
<b>5. Net income before tax</b>					(49,875)	24,803	24,803	24,803	24,803	24,803	24,803	24,803	24,803	24,803
<b>6. Tax</b>	10%					2,480	2,480	2,480	2,480	2,480	2,480	2,480	2,480	2,480
<b>7. Net income after tax</b>					(49,875)	22,323	22,323	22,323	22,323	22,323	22,323	22,323	22,323	22,323
<b>FIRR</b>	<b>44%</b>													
<b>NPV (24%) = P</b>	<b>26,059</b>													

FIRR = financial internal rate of return; NPV = net present value.

Note: One pack of deboned fish worth P100 contains three pieces of milkfish; labor cost is P5/deboned milkfish; the total milkfish deboned is 2,220 pieces per year.

Sources: Financial statements of fishers' associations and Financial Analyst/Economist's estimates.

**Table A11.3: Financial Cash Flow – Income Diversification Project: Mudcrab Culture (0.75 ha pond culture)**

Item	Unit	Quantity	Price (P)	Revenues and Expenses (P)										
				Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>1. Investment</b>														
Construction materials	amount	1	34,470	34,470										
Labor	amount	1	10,000	10,000										
Miscellaneous equipment	set	1	1,000	1,000										
Contingencies (5%)				2,274										
<b>Total investment</b>				<b>47,744</b>										
<b>2. Operation and maintenance costs</b>														
Labor	person-days	100	150	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Crablets	piece	640	12.00	7,680	7,680	7,680	7,680	7,680	7,680	7,680	7,680	7,680	7,680	7,680
Feed	amount/month	10	1,370	13,700	13,700	13,700	13,700	13,700	13,700	13,700	13,700	13,700	13,700	13,700
Fishpond rental	amount	1	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Miscellaneous cost	amount	1	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738
<b>Total variable costs</b>				<b>45,118</b>	<b>45,118</b>	<b>45,118</b>	<b>45,118</b>	<b>45,118</b>	<b>45,118</b>	<b>45,118</b>	<b>45,118</b>	<b>45,118</b>	<b>45,118</b>	<b>45,118</b>
<b>3. Revenue</b>														
Fattened mudcrabs	kg	384	180	69,120	69,120	69,120	69,120	69,120	69,120	69,120	69,120	69,120	69,120	69,120
<b>4. Total revenue</b>				69,120	69,120	69,120	69,120	69,120	69,120	69,120	69,120	69,120	69,120	69,120
<b>5. Net income before tax</b>				(47,744)	24,002	24,002	24,002	24,002	24,002	24,002	24,002	24,002	24,002	24,002
<b>6. Tax</b>	10%				2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
<b>7. Net income after tax</b>				(47,744)	21,602	21,602	21,602	21,602	21,602	21,602	21,602	21,602	21,602	21,602
<b>FIRR</b>	<b>44%</b>													
<b>NPV (24%) = P</b>	<b>25,638</b>													

FIRR = financial internal rate of return; NPV = net present value.

Note: Mortality rate of crabs is 40%.

Sources: Financial statements of fishers' associations and Financial Analyst/Economist's estimates.

**Table A11.4: Financial Cash - Income Diversification Project: Grouper Cage Culture (5m x 5m)**

Item	Unit	Qty	Price (P)	Revenues and Expenses <sup>a</sup> (P)									
				Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
<b>1. Investment</b>													
Cage	amount	1	115,810	115,810			1,800			1,800			1,800
Labor	amount	1	10,500	10,500									
Other materials	set	1	5,000	5,000									
Contingencies (5%)				6,566									
<b>Total investment</b>				<b>137,876</b>			<b>1,800</b>			<b>1,800</b>			<b>1,800</b>
<b>2. Operation and maintenance costs</b>													
Labor	person-month	12	2,000		24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Fingerlings	piece	2,141	57		122,037	122,037	122,037	122,037	122,037	122,037	122,037	122,037	122,037
Trash fish	amount/month	2,835	16		45,360	45,360	45,360	45,360	45,360	45,360	45,360	45,360	45,360
Gasoline	amount	1	12,000		12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Miscellaneous cost	amount	1	8,970		8,970	8,970	8,970	8,970	8,970	8,970	8,970	8,970	8,970
<b>Total variable costs</b>					<b>212,367</b>	<b>212,367</b>	<b>212,367</b>	<b>212,367</b>	<b>212,367</b>	<b>212,367</b>	<b>212,367</b>	<b>212,367</b>	<b>212,367</b>
<b>3. Revenue</b>													
Marketable size grouper	kg	640	460		294,400	294,400	294,400	294,400	294,400	294,400	294,400	294,400	294,400
<b>4. Total revenue</b>					<b>294,400</b>	<b>294,400</b>	<b>294,400</b>	<b>294,400</b>	<b>294,400</b>	<b>294,400</b>	<b>294,400</b>	<b>294,400</b>	<b>294,400</b>
<b>5. Net income before tax</b>					(137,876)	82,033	82,033	80,233	82,033	82,033	82,033	82,033	82,033
<b>6. Tax</b>	10%					8,203	8,203	8,023	8,203	8,203	8,203	8,203	8,203
<b>7. Net income after tax</b>					(137,876)	73,830	73,830	72,210	73,830	73,830	72,210	73,830	73,830
<b>FIRR</b>	<b>53%</b>												
<b>NPV (24%) =P</b>	<b>106,795</b>												

FIRR = financial internal rate of return; NPV = net present value.

<sup>a</sup> Two croppings per year.

Sources: Financial statements of fishers' associations and Financial Analyst/Economist's estimates.

Table A11.5: Financial Cash Flow – Income Diversification Project: Milkfish Cage Culture (10m x 10m x 5m)

Item	Unit	Qty	Price (P)	Revenues and Expenses <sup>a</sup> (P)										
				Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>1. Investment</b>														
Cage	amount	1	300,000	300,000										
Labor	person-days	14	150	2,100										
Other materials/nets	set	1	30,000	30,000						18,000				18,000
Contingencies (5%)				16,605										
<b>Total investment</b>				<b>348,705</b>						<b>18,000</b>				<b>18,000</b>
<b>2. Operation and Maintenance Costs</b>														
Labor	person-month	8	3,000		24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Fingerlings	piece	20,000	7.50		150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Feed	bag	632	500		315,750	315,750	315,750	315,750	315,750	315,750	315,750	315,750	315,750	315,750
Repairs	amount	1	500		500	500	500	500	500	500	500	500	500	500
Miscellaneous cost	amount	1	1,149		1,149	1,149	1,149	1,149	1,149	1,149	1,149	1,149	1,149	1,149
<b>Total variable costs</b>					<b>491,399</b>	<b>491,399</b>	<b>491,399</b>	<b>491,399</b>	<b>491,399</b>	<b>491,399</b>	<b>491,399</b>	<b>491,399</b>	<b>491,399</b>	<b>491,399</b>
<b>3. Revenue</b>														
Marketable size milkfish	kg	7,418	90		667,620	667,620	667,620	667,620	667,620	667,620	667,620	667,620	667,620	667,620
<b>4. Total revenue</b>					667,620	667,620	667,620	667,620	667,620	667,620	667,620	667,620	667,620	667,620
<b>5. Net income before tax</b>				(348,705)	176,221	176,221	176,221	176,221	158,221	176,221	176,221	176,221	176,221	158,221
<b>6. Tax</b>	10%				17,622	17,622	17,622	17,622	15,822	17,622	17,622	17,622	17,622	15,822
<b>7. Net income after tax</b>				(348,705)	158,599	158,599	158,599	158,599	142,399	158,599	158,599	158,599	158,599	142,399
<b>FIRR</b>	<b>44%</b>													
<b>NPV (24%) = P</b>	<b>183,727</b>													

FIRR = financial internal rate of return; NPV = net present value.

<sup>a</sup> Two croppings per year.

Sources: Financial statements of fishers' associations and Financial Analyst/Economist's estimates.

**Table A11.6: Financial Cash Flow - Income Diversification Project: Swine Fattening**

Item	Unit	Qty	Price (P)	Revenues and Expenses (P)										
				Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>1. Investment</b>														
Animal pen	unit	1	4,000	4,000										
Tools and equipment	set	1	2,000	2,000										
<b>Total investment</b>				6,000										
<b>2. Operation and Maintenance Costs</b>														
Weanlings <sup>a</sup>	head	6	2,000		12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Labor	person-days	60	100		6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Feed	bags	32	550		17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600
Drugs/antibiotics	per head		300		1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Miscellaneous cost <sup>b</sup>					1,509	1,509	1,509	1,509	1,509	1,509	1,509	1,509	1,509	1,509
<b>Total variable costs</b>					25,400	25,400	25,400	25,400	25,400	25,400	25,400	25,400	25,400	25,400
<b>3. Revenue</b>														
Fattened hogs	kg	465	65		30,225	30,225	30,225	30,225	30,225	30,225	30,225	30,225	30,225	30,225
<b>4. Total revenue</b>					30,225	30,225	30,225	30,225	30,225	30,225	30,225	30,225	30,225	30,225
<b>5. Net income before tax</b>					(6,000)	4,825	4,825	4,825	4,825	4,825	4,825	4,825	4,825	4,825
<b>6. Tax</b>	10%					483	483	483	483	483	483	483	483	483
<b>7. Net income after tax</b>					(6,000)	4,343	4,343	4,343	4,343	4,343	4,343	4,343	4,343	4,343
<b>FIRR</b>	<b>72%</b>													
<b>NPV (24%) = P</b>	<b>8,055</b>													

( ) = negative, FIRR = financial internal rate of return; NPV = net present value.

<sup>a</sup> Fattening of three head of swine per batch, at two batches per year.

<sup>b</sup> Four percent of the total cost of weanlings, feeds and medicines.

Sources: Financial statements of fishers' associations and Financial Analyst/Economist's estimates.

**Table A11.7: Summary of the Results of the Financial Analysis of Microenterprise Projects**

<b>Microenterprise Project</b>	<b>FIRR at Project Appraisal<sup>a</sup></b> (%)	<b>Calculated FIRR for PCR<sup>b</sup></b> (%)	<b>NPV at 24%</b> (P)
1. Seaweed Culture	21	55	56,711
2. Milkfish Deboning		44	26,059
3. Mudcrab Culture	22	44	25,638
4. Grouper Cage Culture		53	106,795
5. Milkfish Cage Culture	23	44	183,727
6. Swine Fattening	15	72	8,055

FIRR = financial internal rate of return; NPV = net present value; PCR = project completion review.

<sup>a</sup> Compared with the weighted average cost of capital of 7.5%.

<sup>b</sup> Compared with the cost of microcredit of 24%.

Sources: RRP:PHI 26616 and Tables A11.1 – A11.6

**Table A11.8: Sensitivity Analysis of Microenterprise FIRRs**

<b>Microenterprise Project</b>	<b>Base FIRR</b> (%)	<b>Recalculated FIRR</b>		<b>Sensitivity Indicator</b>	
		<b>Increase in Variable Costs by 10%</b>	<b>Decrease in Revenue by 10%</b>	<b>Increase in Variable Costs by 10%</b>	<b>Decrease in Revenue by 10%</b>
1. Seaweed Culture	55	51	45	1.43	3.50
2. Milkfish Deboning	44	34	29	5.05	7.59
3. Mudcrab Culture	44	35	30	4.70	7.20
4. Grouper Cage Culture	53	38	32	5.31	5.37
5. Milkfish Cage Culture	44	30	25	7.15	9.71
6. Swine Fattening	72	-10	23.85	11.44	6.69

FIRR = financial internal rate of return.

Source: Financial Analyst/Economist's estimates.

**Table A11.9: Results of the Switching Values Technique**

<b>Microenterprise Project</b>	<b>Base FIRR</b> (%)	<b>Increase in Variable Costs</b> (%)	<b>Decrease in Revenue</b> (%)
1. Seaweed Culture	55	70.13	28.58
2. Milkfish Deboning	44	19.82	13.18
3. Mudcrab Culture	44	21.26	13.88
4. Grouper Cage Culture	53	18.82	13.57
5. Milkfish Cage Culture	44	13.99	10.33
6. Swine Fattening	72		.03

FIRR = financial internal rate of return.

Source: Financial Analyst/Economist's estimates.

**Table A11.10: Actual Annual Foreign Currency of ADB (OCR) Disbursement**

Item	1999	2000	2001	2002	2003	2004	2005	2006
<b>Actual annual ADB-OCR disbursement</b> (\$ million)	0.001	0.091	0.047	0.309	0.000	0.355	0.007	0.000
Conversion of actual annual disbursement values (current \$ to 2006 \$ values)								
MUV Index: 2006 = 100	0.913	0.894	0.867	0.857	0.921	0.984	0.984	1.000
Value of ADB-OCR FX disbursement (in 2006 values), \$ million	0.001	0.102	0.054	0.361	0.000	0.361	0.007	0.000
Exchange Rate (P:\$) used by ADB	39.100	44.200	50.990	51.600	54.200	56.040	55.090	51.310
SER Factor for converting \$ to Peso	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200
Shadow exchange rate in 2006 values	46.920	53.040	61.190	61.920	65.040	67.250	66.100	61.570
Peso equivalent of FX disbursements in 2006 economic values, P million	.051	5.401	3.315	22.339	0.000	24.254	.470	0.000

ADB-OCR = Asian Development Bank -Ordinary Capital Resources; FX = foreign exchange; MUV = manufacturing unit value; SER = shadow exchange rate

Sources: ADB, World Bank, National Economic Development Authority and Financial Analyst/Economist's estimates

**Table A11.11: Actual Annual Local Currency of ADB (OCR) Disbursement**

Item	1999	2000	2001	2002	2003	2004	2005	2006
<b>Actual annual ADB-OCR disbursement</b> (P million)	16.657	37.879	25.495	60.733	52.466	28.580	29.416	23.346
Conversion of current peso disbursement values to 2006 Pesos								
CPI deflator for local currency (2006=100)	0.698	0.725	0.774	0.798	0.825	0.875	0.941	1.000
LC disbursement in 2006 economic values (P million)	23.877	52.233	32.922	76.107	63.579	32.682	31.251	23.346
Total Economic Value of ADB-OCR Disbursements (2006 terms) in P million	23.928	56.734	36.238	98.446	63.579	56.936	31.721	23.346

ADB-OCR = Asian Development Bank- Ordinary Capital Resources; CPI = consumer price index; LC = local currency

Sources: ADB, National Economic Development Authority and Financial Analyst/Economist's estimates.

**Table A11.12: Actual Annual Foreign Currency of ADB (ADF) Disbursement**

Item	1999	2000	2001	2002	2003	2004	2005	2006
<b>Actual annual ADB-ADF disbursement</b> (\$ million)	0.000	0.004	0.004	0.000	0.060	0.152	0.000	.0871
Conversion of actual annual disbursement values (current \$ to 2006 \$ values)								
MUV Index: 2006 = 100	0.913	0.894	0.867	0.857	0.921	0.984	0.984	1.000
Value of ADB-ADF FX disbursement (in 2006 values), \$ million	0.000	0.004	0.005	0.000	0.065	0.154	0.000	0.871
Exchange Rate (P:\$) used by ADB	39.100	44.200	50.990	51.600	54.200	56.040	55.090	51.310
SER Factor for converting \$ to Peso	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200
Shadow exchange rate in 2006 values	46.920	53.040	61.190	61.920	65.040	67.250	66.100	61.570
Peso equivalent of FX disbursements in 2006 economic values, P million	0.000	.237	.282	0.000	4.239	10.385	0.000	53.629

ADB-ADF = Asian Development Bank-Asian Development Fund; FX = foreign exchange; MUV = manufacturing unit value; SER = shadow exchange rate

Sources: ADB, World Bank, National Economic Development Authority and Financial Analyst/Economist's estimates

**Table A11.13: Actual Annual Local Currency of ADB (ADF) Disbursement**

Item	1999	2000	2001	2002	2003	2004	2005	2006
<b>Actual annual ADB-ADF disbursement</b> (P million)	0.000	45.482	46.452	70.434	67.425	126.987	207.347	45.255
Conversion of current peso disbursement values to 2006 Pesos								
CPI deflator for local currency (2006=100)	0.698	0.725	0.774	0.798	0.825	0.875	0.941	1.000
LC disbursement in 2006 economic values, P million	0.000	62.716	59.984	88.263	81.707	145.211	220.278	45.255
Total Economic Value of ADB-ADF Disbursements (2006 terms), P million	0.000	62.954	60.267	88.263	85.946	155.595	220.278	98.885

ADB-ADF = Asian Development Bank-Asian Development Fund; CPI = consumer price index; LC = local currency

Sources: ADB, National Economic Development Authority and Financial Analyst/Economist's estimates.

**Table A11.14: Actual Annual Foreign Currency of JBIC Disbursement**

Item	1999	2000	2001	2002	2003	2004	2005	2006
<b>Actual annual JBIC disbursement (\$ million equivalent)</b>	0.000	1.051	1.734	3.170	1.115	.410	1.651	1.263
MUV Index: 2006 = 100	0.913	0.894	0.867	0.857	0.921	0.984	0.984	1.000
Value of JBIC FX disbursement (in 2006 values), \$ million	0.000	1.176	1.999	3.701	1.211	.417	1.677	1.263
Exchange Rate (P:\$) used by ADB	.039	.044	.051	51.600	54.200	56.04	55.090	51.310
SER Factor for converting Y to Peso	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200
Shadow exchange rate in 2006 values	46.920	53.040	61.190	61.920	65.040	67.250	66.100	61.570
Peso equivalent of FX disbursements in 2006 economic values, P million	0.000	62.376	122.320	229.173	78.766	28.011	110.879	77.765

FX = foreign exchange; JBIC = Japan Bank for International Cooperation; MUV = manufacturing unit value; SER = shadow exchange rate

Sources: ADB, World Bank, National Economic Development Authority and Financial Analyst/Economist's estimates

**Table A11.15: Actual Annual Local Currency of JBIC Disbursement**

Item	1999	2000	2001	2002	2003	2004	2005	2006
<b>Actual annual JBIC disbursement (P million)</b>	4.731	8.973	9.178	13.829	26.450	22.360	15.204	13.443
Conversion of current peso disbursement values to 2006 pesos								
CPI deflator for local currency (2006=100)	0.698	0.725	0.774	0.798	0.825	0.875	0.941	1.000
LC disbursement in 2006 economic values (P million)	6.782	12.373	11.852	17.329	32.052	25.569	16.152	13.443
Total Economic Value of JBIC Disbursements (2006 terms) (P million)	6.782	74.748	134.172	246.502	110.818	53.580	127.031	91.209

CPI = consumer price index; JBIC = Japan Bank for International Cooperation; LC = local currency.

Sources: ADB, National Economic Development Authority and Financial Analyst/Economist's estimates

**Table A11.16: Actual Annual GOP Disbursements**

Item	1999	2000	2001	2002	2003	2004	2005	2006
<b>Actual annual GOP disbursement (P million)</b>	20.797	56.527	80.126	54.753	79.072	61.683	46.455	8.543
Conversion of current peso disbursement values to 2006 pesos								
CPI deflator for local currency (2006=100)	0.698	0.725	0.774	0.798	0.825	0.875	0.941	1.000
LC disbursement in 2006 economic values (P million)	29.813	77.947	103.468	68.612	95.822	70.535	49.352	8.543
Total Economic Value of GOP Disbursements (2006 terms) (P million)	29.813	77.947	103.468	68.612	95.822	70.535	49.352	8.543

CPI = consumer price index; GOP = Government of the Philippines; LC = local currency

Sources: ADB, National Economic Development Authority and Financial Analyst/Economist's estimates.

**Table A11.17: Actual Annual LGU Disbursements**

Item	1999	2000	2001	2002	2003	2004	2005	2006
<b>Actual annual LGU disbursement (P million)</b>	38.240	68.245	75.363	81.786	87.099	86.974	87.093	87.278
Conversion of current peso disbursement values to 2006 pesos								
CPI deflator for local currency (2006=100)	0.698	0.725	0.774	0.798	0.825	0.875	0.941	1.000
LC disbursement in 2006 economic values (P million)	54.816	94.105	97.318	102.489	105.549	99.456	92.524	87.278
Total Economic Value of LGU Disbursements (2006 terms) (P million)	54.816	94.105	97.318	102.489	105.549	99.456	92.524	87.278

LGU = local government unit;

Sources: ADB, National Economic Development Authority and Financial Analyst/Economist's estimates.

**Table A11.18: Summary of Project Cost by Source of Financing**

<b>Item</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Total Project Investment Cost: ADB-OCR, ADB-ADF, and JBIC (P million)	30.71	195.34	230.68	433.21	260.34	266.11	379.03	213.44
Total Project O&M Cost: GOP and LGU (P million)	84.63	172.05	200.79	171.10	201.37	169.99	141.88	95.82
<b>Total Project Cost (P million)</b>	<b>115.34</b>	<b>367.39</b>	<b>431.46</b>	<b>604.31</b>	<b>461.71</b>	<b>436.10</b>	<b>520.91</b>	<b>309.26</b>

ADB-ADF = Asian Development Bank-Asian Development Fund; ADB-OCR = Asian Development Bank- Ordinary Capital Resources; GOP =Government of the Philippines; JBIC = Japan Bank for International Cooperation; LGU = local government unit; O&M = operation and maintenance

Sources: Financial Analyst/Economist's estimates based on Tables A11.10 –A11.17

**Table A11.19: Calculation of the Economic Price of Fish**

Item	Value
FOB at origin (\$/t), 2006 <sup>a</sup>	558.80
Add: Freight and insurance charges <sup>b</sup>	139.70
CIF price (frozen commodity) Manila (\$/t)	698.50
Less: Cost of freezing per t <sup>c</sup>	164.00
CIF price (fresh equivalent) Manila (\$/t)	534.50
Shadow exchange rate <sup>d</sup>	61.57
CIF peso equivalent	32,909.17
Add: Port and handling charges <sup>e</sup>	1,645.46
Transport to vessel <sup>d</sup>	3,642.00
Ex-vessel economic price (P/t)	38,196.62
Ex-vessel economic price per unit (P/kg)	38.20

CIF = cost of insurance and freight; FOB = free on board

<sup>a</sup> The average FOB price of fresh fish in 2006 was obtained from the Department of Trade and Industry.

<sup>b</sup> Assumed at 25% of FOB price.

<sup>c</sup> This was estimated based on the figure at project appraisal and then adjusted for inflation.

<sup>d</sup> The shadow exchange rate factor used by NEDA is 1.2. The shadow exchange rate was computed by multiplying the shadow exchange rate factor by the prevailing market exchange rate (P51.31:\$1).

<sup>e</sup> Assumed at 5% of CIF price at peso equivalent.

Sources: the Department of Trade and Industry, National Economic Development Authority, RRP: PHI 26616

**Table A11.20: Projected Fish Biomass Under the With and Without Project Scenarios**

Year	Fish Biomass Without Project in 18 Bays <sup>a</sup>	Actual and Projected Fish Biomass in 18 Bays With Project <sup>b</sup>	Incremental Fish Biomass in 18 Bays
	(t)	(t)	(t)
1999	722	722	
2000	704	731	27
2001	685	743	58
2002	667	761	94
2003	650	783	133
2004	633	808	175
2005	617	850	233
2006	601	873	272
2007	585	897	312
2008	570	922	352
2009	555	947	392
2010	541	973	432
2011	527	1,000	473
2012	513	1,027	514
2013	500	1,056	556
2014	487	1,085	598
2015	474	1,114	641
2016	462	1,145	684
2017	450	1,177	727
2018	438	1,209	771

<sup>a</sup> Value of actual fish biomass for 1999 was estimated based on actual data. Values of fish biomass without the Project for succeeding years were projected by applying an annual rate of decline of 2.6%.

<sup>b</sup> Annual values of fish biomass with the Project, over the period 2002–2005, were estimated based on annual growth rates of fish biomass provided by BFAR's PMO derived from data collected from RSAs and the impact evaluation study. Values of fish biomass from 2006 to 2018 were projected based on an average annual growth rate of 2.75%/year.

**Table A11.21: Projected Fish Production under the Without and With Project Scenarios**

<b>Year</b>	<b>Fish Production Without Project in 18 Bays<sup>a</sup></b> (t)	<b>Actual and Projected Fish Production in 18 Bays With Project<sup>b</sup></b> (t)	<b>Incremental Fish Production in 18 Bays</b> (t)
1999	130,553	130,553	
2000	127,159	127,159	
2001	123,853	124,743	890
2002	120,633	125,741	5,108
2003	117,496	127,124	9,628
2004	114,441	129,031	14,590
2005	111,466	131,741	20,275
2006	108,568	132,004	23,436
2007	107,545	132,268	26,523
2008	102,995	132,533	29,537
2009	100,318	132,798	32,480
2010	97,709	133,063	35,354
2011	95,169	133,329	38,161
2012	92,695	133,596	40,902
2013	90,284	133,863	43,579
2014	88,937	134,131	46,194
2015	85,651	134,399	48,749
2016	83,424	134,668	51,244
2017	81,255	134,937	53,683
2018	79,142	135,207	58,065

<sup>a</sup> Value of actual fish production (or fish catch) for 1999 was estimated based on actual data provided by the Bureau of Fisheries and Aquatic Resources and project management office (BFAR-PMO). Values of fish production under the “without project” situation for succeeding years were projected by applying an annual rate of decline of about 2.6% based on historical trends as estimated and applied at project appraisal.

<sup>b</sup> Values of fish production with the Project over the period 2002–2005 were based on data obtained from BFAR RSAs and the impact evaluation study as well as anecdotal information from fishers. Values of fish production for subsequent years were projected based on an average annual rate of growth in fish production over the period 2000–2005 of about 0.20%/year, on average. The annual growth rates from 1999 to 2000 and from 2000 to 2001 of –2.6%/year and –1.9%/year, respectively, were based on the ADB midterm review mission figures.

Sources: ADB Midterm Review Mission Report, BFAR-Resource and Social Assessment Reports, BFAR-Project Management Office, RRP:PHI 26616 and Financial Analyst/Economist’s estimates

**Table A11.22: Projected Volume of Fish Saved from Destructive/Illegal Fishing Under the With and Without Project Scenarios**

<b>Year</b>	<b>Fish Production Due to Destructive Fishing Without Project<sup>a</sup></b> (t)	<b>Projected Fish Production Due to Destructive Fishing With Project<sup>b</sup></b> (t)	<b>Annual Rate of Decrease in Fish Production Due to Destructive Fishing With Project</b> (%)	<b>Volume of Fish Production Saved from Destructive Fishing</b> (t)
1999	6,528	6,528		0
2000	6,358	6,358		0
2001	6,193	6,193		0
2002	6,032	5,428	10	603
2003	5,875	4,994	15	881
2004	5,722	4,578	20	1,144
2005	5,573	4,180	25	1,393
2006	5,428	3,800	30	1,629
2007	5,287	2,644	50	2,644
2008	5,150	2,575	50	2,575
2009	5,016	2,508	50	2,508
2010	4,885	2,443	50	2,443
2011	4,758	2,379	50	2,379
2012	4,635	2,317	50	2,317
2013	4,514	2,257	50	2,257
2014	4,397	2,198	50	2,198
2015	4,283	2,141	50	2,141
2016	4,171	2,086	50	2,086
2017	4,063	2,031	50	2,031
2018	3,957	1,979	50	1,979

<sup>a</sup> Value of actual fish production due to destructive and illegal fishing in 1999 was estimated at 5% of total fish production at the 18 bays under the Project and was assumed to remain at this level under “without project” situation.

<sup>b</sup> Values of fish production due to destructive and illegal fishing, with the Project, over the period 2000–2018 were projected based on the assumption that destructive and illegal fishing activities will decline by about 50% over the life of the Project starting in 2007.

Sources: BFAR-Project Management Office and Financial Analyst/Economist’s estimates

**Table A11.23: Projected Mangrove Area With and Without Project Scenarios**

<b>Year</b>	<b>Projected Mangrove Area Managed Without Project<sup>a</sup></b> (ha)	<b>Projected Mangrove Area Managed With Project<sup>b</sup></b> (ha)	<b>Mangrove Area Saved from Degradation With Project</b> (ha)	<b>Mangrove Area Reforested/ Rehabilitated Under Project</b> (ha)
1999	25,083	25,083	0	0
2000	24,821	24,952	131	100
2001	24,561	24,822	261	200
2002	24,304	24,692	388	600
2003	24,050	24,562	513	900
2004	23,798	24,434	636	1,100
2005	23,549	24,306	757	1,300
2006	23,302	24,179	877	1,300
2007	23,058	24,052	994	1,300
2008	22,817	23,926	1,109	1,300
2009	22,578	23,801	1,223	1,300
2010	22,342	23,676	1,335	1,300
2011	22,108	23,553	1,445	1,300
2012	21,876	23,429	1,553	1,300
2013	21,647	23,307	1,659	1,300
2014	21,421	23,185	1,764	1,300
2015	21,196	23,063	1,867	1,300
2016	20,975	22,943	1,968	1,300
2017	20,755	22,822	2,068	1,300
2018	20,538	22,703	2,165	1,300

<sup>a</sup> The mangrove area in 1999 was estimated based on actual data derived from project documents and was projected under the “without project” situation by using an annual rate of decline of 1.05%.

<sup>b</sup> The mangrove area was projected under the “with project” situation, based on an annual rate of decline of 0.52% or an annual decline in the aggregate value of fish production in mangrove areas by 50%.

Sources: BFAR Project Completion Report, BFAR-Project Management Office and Financial Analyst/Economist’s estimates

Table A11.24: Calculation of the EIRR of the Whole Project

Year	Project Investment (P million)	Operation and Maintenance Cost (P million)	Total Cost (P million)	Establishment of Fish Sanctuaries and Reserves (P million)	Reduced Destructive and Illegal Fishing (P million)	Increase in Fish Catch (P million)	Mangrove Reforestation (P million)	Total Incremental Gross Benefits (P million)	Net Benefits (P million)
1999	30.71	84.63	115.34	-	-	-	-	-	(115.34)
2000	195.34	172.05	367.39	-	-	-	4.75	4.75	(362.64)
2001	230.68	200.79	431.46	1.75	-	34.01	9.42	45.17	(386.29)
2002	433.21	171.10	604.31	2.88	23.04	172.08	14.02	210.49	(392.82)
2003	260.34	201.37	461.71	4.24	33.66	334.10	18.55	389.01	(71.70)
2004	266.11	169.99	436.10	5.72	43.71	513.57	23.00	580.94	149.90
2005	379.03	141.88	520.91	7.30	53.22	721.21	29.55	810.64	290.39
2006	213.44	95.82	309.26	9.52	62.20	832.99	38.21	945.29	633.66
2007		95.82	95.82	11.00	100.98	912.12	48.96	1,088.87	977.23
2008		95.82	95.82	12.49	98.35	1029.87	59.64	1,218.81	1,104.54
2009		95.82	95.82	14.02	95.79	1,144.83	68.09	1,341.10	1,226.92
2010		95.82	95.82	15.52	93.30	1,257.10	76.47	1,460.65	1,336.57
2011		95.82	95.82	17.05	90.88	1,366.72	80.45	1,573.10	1,459.28
2012		95.82	95.82	18.61	88.52	1,473.79	84.36	1,683.61	1,569.45
2013		95.82	95.82	20.15	86.21	1,578.35	88.21	1,791.35	1,677.09
2014		95.82	95.82	21.75	83.97	1,680.48	91.99	1,896.55	1,782.26
2015		95.82	95.82	23.34	81.79	1,780.24	95.71	1,999.49	1,885.26
2016		95.82	95.82	24.92	79.66	1,877.70	99.37	2,099.95	1,985.82
2017		95.82	95.82	26.55	77.59	1,972.90	102.96	2,198.31	2,084.19
2018		95.82	95.82	28.23	75.57	2,065.92	106.50	2,294.54	2,180.41
								<b>EIRR=</b>	<b>30.72%</b>
								<b>NPV@15%=P</b>	<b>2,030.05</b>

EIRR = economic internal rate of return; NPV = net present value.

Source: Financial Analyst/Economist's estimates based on Tables A11.18, A11.20-A11.23

**Table A11.25: Sensitivity Analysis and Switching Values**

<b>Item</b>	<b>Change in Variable</b>	<b>Base EIRR (%)</b>	<b>Recalculated EIRR (%)</b>	<b>Sensitivity Indicator</b>	<b>Switching Values<sup>a</sup> (%)</b>
(i) Increase in total project cost	10%	30.72	28.31	0.785	>100
(ii) Increase in investment	10%	30.72	29.33	0.452	>100
(iii) Increase in operation and maintenance costs	10%	30.72	29.61	0.361	>100
(iv) Decrease in benefits from fish reserves and sanctuaries	10%	30.72	30.69	0.010	>100
(v) Decrease in destructive/illegal fishing, only 50% of target	10%	30.72	30.53	0.062	>100
(vi) Decrease in fish production or catch	10%	30.72	28.42	0.749	59.10
(vii) Decrease in benefits from mangrove reforestation/ rehabilitation	10%	30.72	30.58	0.046	>100
(viii) Decrease in all project benefits	10%	30.72	28.06	0.866	51.75
(ix) Decrease in all project benefits and increase in all project costs	10%	30.72	25.79	1.605	34.90
(x) Increase in total project cost	20%	30.72	26.22	.732	>100
(xi) Increase in investment	20%	30.72	28.05	0.435	>100
(xii) Increase in operation and maintenance costs	20%	30.72	28.57	0.350	>100
(xiii) Decrease in benefits from fish reserves and sanctuaries	20%	30.72	30.66	0.010	>100
(xiv) Decrease in destructive/illegal fishing, only 50% of target	20%	30.72	30.35	0.060	>100
(xv) Decrease in fish production or catch	20%	30.72	26.02	0.765	59.10
(xvi) Decrease in benefits from mangrove reforestation/ rehabilitation	20%	30.72	30.44	0.046	>100
(xvii) Decrease in all project benefits	20%	30.72	25.27	0.887	51.75
(xviii) Decrease in all project benefits and increase in all project costs	20%	30.72	21.28	1.536	34.90

EIRR = economic internal rate of return.

<sup>a</sup> Percent change to maintain an EIRR = 15%

Source: Financial Analyst/Economist's estimates

Table A11.26: Benefit Distribution and Poverty Impact Analysis for the Project

Item	Distribution of Benefits/Costs (P million in 2006 constant prices)						
	Financial Net Present Value (1)	Economic Net Present Value (2)	Difference (1) -(2)	Coastal Fishing Households	Municipal Government /Other Sectors Municipal Economy (LGUs)	National Government /Economy (GOP)	Total
<b>Incremental Net Benefits From</b>	<b>4,706.58</b>	<b>3,922.16</b>	<b>784.62</b>	<b>396.20</b>	<b>156.93</b>	<b>231.49</b>	<b>784.62</b>
Fish sanctuaries/reserves	52.01	43.34	8.67	4.33	1.74	2.60	8.67
Reduced illegal/destructive fishing	301.39	251.15	50.24	25.12	10.05	15.07	50.24
Increased fish production	4,119.99	3,433.19	686.80	343.40	137.36	206.04	686.80
Mangrove management/reforestation	233.39	194.48	38.91	23.35	7.78	7.78	38.91
<b>Incremental Costs</b>	<b>2,270.58</b>	<b>1,892.12</b>	<b>378.46</b>	<b>-</b>	<b>103.42</b>	<b>275.04</b>	<b>378.46</b>
Project investment cost <sup>a</sup>	1,236.62	1,030.52	206.10			206.10	206.10
Project O&M cost	1,033.96	861.60	172.36		103.42	68.94	172.36
<b>Net Benefits</b>	<b>2,436.20</b>	<b>2,030.05</b>	<b>406.16</b>	<b>396.20</b>	<b>53.51</b>	<b>(43.55)</b>	<b>406.16</b>
Proportion of Poor				70%	30%	50%	
Net Benefits to the Poor				277.13	16.05	(21.77)	271.41
<b>Poverty Impact Ratio</b>							<b>0.67</b>

O&M = operation and maintenance.

<sup>a</sup> The national Government is assumed to cover the investment cost of the Project.

Source: Financial Analyst/Economist's estimates.

## ENVIRONMENTAL IMPACT OF PROJECT ACTIVITIES

**Table A12.1: Fish Species that Reappeared in Bays and Gulfs under the Project**

Region	Bay/Gulf	Fish species that have reappeared after sanctuaries established
1	Lingayen Gulf	Bawo, Caballas, Maskad, Pingaw, Sapsap, Sugpo
4-A	Calauag, Tayabas, Ragay	Alumahan, Anchovy, Baghak, Bakagan, Baliwis, Bangus, Bariles, Bisugo, Buglawan, Ginto-ginto, Ilak, Kalapato, Katyoyot, Malaway, Manabon, Murang Ungos, Pak-an, Pakoy, Pampano, Sapsap, Saramulyete, Sigapo, Tamban, Tulingan
4-B	Honda, Puerto Princesa	Anchovy, Hasa-hasa, Maya-maya, Pusit, Roundscad, Suwahan, Talakitok, Tili, Tulingan
5	Lagonoy Gulf	Alatan, Damos, Golden Fish, Grouper, Lison, Manites, Matang Baka, Maya-maya, Pagi, Talakitok, Tiki, Tulingan
8	Carigara, San Pedro, Sogod	Agawas, Amag-amag, Baghak, Bakagan, Bangus, Bariles, Barracuda, Bawo, Buktot, Cuttlefish, Damos, Diwit-diwit, Flying Fish, Goat fish, Ilak, Indangan, Kabasi, Lambarok, Lambiyaw, Lomod, Magtigi, Malapinya, Malasugi, Mo-ong, Mullet, Pagi, Parotpot, Parrot fish, Pating, Patokon, Pusit, Roundscad, Sahoy, Samaral, Sebo, Siga-siga, Subid-subid, Suga, Suwahan, Tagbao, Tamban, Tangigui, Tapisok, Terapon, Tulingan, Wapay
11	Davao Gulf	Bariles, Grouper, Ilak, Matang Baka, Maya-maya, Mo-ong, Roundscad, Talakitok, Tamban, Tulingan

Sources: Bureau of Fisheries and Aquatic Resources - Project Management Office (BFAR-PMO) and the Department of Agriculture and BFAR.

### A. Lagonoy Gulf, Region 5

**Table A12.2: Comparison of REA 1994 and RSA 2004 Findings for Agoho Fish Sanctuary (San Andres, Catanduanes)**

Parameter	REA (1994)	RSA (2004)
Live Coral Cover (%)	22.4 (poor)	36.58 (fair)
Number of Fish Families	15	22
Diversity (Number of fish species/1,000 sq m)	141 (very high)	103 (very high)
Fish Biomass (ton/sq m)	2.69 (very low)	13.72 (low)

REA = Resource and Ecological Assessment, RSA = Resources Social Assessment.

Sources: Bureau of Fisheries and Aquatic Resources - Project Management Office (BFAR-PMO) and the Department of Agriculture.

**Table A12.3: Comparison of REA 1994 and RSA 2004 Findings for Bacacay Fish Sanctuary**

<b>Parameter</b>	<b>REA (1994)</b>	<b>RSA (2004)</b>
Live Coral Cover (%)	53.1 (good)	41.88 (fair)
Number of Fish Families	10	14
Diversity (Number of fish species/1,000 sq m)	110 (very high)	128 (very high)
Fish Biomass (ton/sq m)	4.8 (very low)	5.86 (low)

REA = Resource and Ecological Assessment, RSA = Resources Social Assessment.

Sources: Bureau of Fisheries and Aquatic Resources - Project Management Office (BFAR-PMO) and the Department of Agriculture.

## **B. Sogod Bay, Region 8**

**Table A12.4: Comparison of RSA 2002 and RSA 2005 Findings for San Francisco Fish Sanctuary**

<b>Parameter</b>	<b>RSA (2002)</b>	<b>RSA (2005)</b>
Live Coral Cover (%)	42.4 (fair)	65.18 (good)
Diversity (Number of fish species/1,000 sq m)	103 (very high)	110 (very high)
Density (Number of fish/1,000 sq m <sup>2</sup> )	5,758 (high)	3,840 (high)

RSA = Resources Social Assessment.

Sources: Bureau of Fisheries and Aquatic Resources - Project Management Office (BFAR-PMO) and the Department of Agriculture.

**Table A12.5: Comparison of RSA 2002 and RSA 2005 Findings for Liloan Fish Sanctuary**

<b>Parameter</b>	<b>RSA (2002)</b>	<b>RSA (2005)</b>
Live Coral Cover (%)	27.40 (fair)	50.82 (good)
Diversity (Number of fish species/1,000 sq m)	84 (high)	68 (moderate)
Density (Number of fish/1,000sq m <sup>2</sup> )	1,890 (moderate)	2,420 (high)

RSA = Resources Social Assessment.

Sources: Bureau of Fisheries and Aquatic Resources - Project Management Office (BFAR-PMO) and the Department of Agriculture.

### C. Butuan Bay, Region 13

**Table A12.6: Comparison of RSA 2001 and RSA 2005 Findings for Binowangan, Fish Sanctuary**

<b>Parameter</b>	<b>RSA (2001)</b>	<b>RSA (2005)</b>
Live Coral Cover (%)	34.19 (fair)	55.78 (good)
Number of Fish Species per 1,000 sq m	54 (moderate)	124 (very high)
Number of fish/1,000 sq m <sup>2</sup>	1,316 (moderate)	2,640 (high)
Fish Biomass (ton/sq km)	NA	7.39 (low)

RSA = Resources Social Assessment.

Sources: Bureau of Fisheries and Aquatic Resources - Project Management Office (BFAR-PMO) and the Department of Agriculture.

**Table A12.7: Comparison of RSA 2001 and RSA 2005 Findings for Gusoon, Fish Sanctuary**

<b>Parameter</b>	<b>RSA (2001)</b>	<b>RSA (2005)</b>
Live Coral Cover (%)	26.82 (fair)	62.65 (good)
Number of Fish Species per 1,000 sq m	106 (very high)	124 (very high)
Number of fish/1,000 sq m <sup>2</sup>	3,595 (high)	2,700 (high)
Fish Biomass (ton/sq km)	NA	9.67 (low)

RSA = Resources Social Assessment.

Sources: Bureau of Fisheries and Aquatic Resources - Project Management Office (BFAR-PMO) and the Department of Agriculture.

**Table A12.8: Comparison of RSA 2001 and RSA 2005 Findings for Vinapor, Fish Sanctuary**

<b>Parameter</b>	<b>RSA (2001)</b>	<b>RSA (2005)</b>
Live Coral Cover (%)	31.2 (fair)	49.1 (fair)
Number of Fish Species per 1,000 sq m	87 (high)	128 (very high)
Number of fish/1,000 sq m <sup>2</sup>	7,266 (high)	2,480 (high)
Fish Biomass (ton/sq km)	NA	7.39 (low)

RSA = Resources Social Assessment.

Sources: Bureau of Fisheries and Aquatic Resources - Project Management Office (BFAR-PMO) and the Department of Agriculture.