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Report No. 9690

PROJECT PERFORMANCE AUDIT REPORT

INDIA

**GUJARAT FISHERIES PROJECT
(LOAN 1394-IN/CREDIT 695-IN)**

AND

**ANDHRA PRADESH FISHERIES PROJECT
(CREDIT 815-IN)**

JUNE 21, 1991

Operations Evaluation Department

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ABBREVIATIONS AND ACRONYMS

1. Central Government

ARDC	-	Agricultural Refinance and Development Corporation (now NABARD)
CWPRS	-	Central Water and Power Research Station, Pune
FSI	-	Fisheries Survey of India, Bombay
GOI	-	Government of India
IAS	-	Indian Administrative Service
NABARD	-	National Bank for Agriculture and Rural Development (formerly ARDC)
VPT	-	Visakhapatnam Port Trust

2. Gujarat State

GCF	-	Gujarat Commissionerate of Fisheries
GDPF	-	Gujarat Department of Ports and Fisheries
GFCCA	-	Gujarat Fisheries Central Cooperative Association
GMB	-	Gujarat Maritime Board
GOG	-	Government of Gujarat State

3. Andhra Pradesh State

APFC	-	Andhra Pradesh Fisheries Corporation
APRBD	-	Andhra Pradesh Roads and Buildings Department
APSCB	-	Andhra Pradesh State Cooperative Bank
DOF	-	Directorate of Fisheries
DSP	-	Directorate of State Ports
GOAP	-	Government of Andhra Pradesh State
PRD	-	Panchayati Raj Department

4. World Bank Nomenclature

CP	-	FAO/World Bank Cooperative Program
IBRD	-	International Bank for Reconstruction and Development
IDA	-	International Development Association
PCR	-	Project Completion Report
NDO	-	World Bank Resident Mission, New Delhi Office
SAR	-	Staff Appraisal Report of the World Bank
WB	-	World Bank

5. Miscellaneous

FRP	-	Glass-fibre Reinforced Plastic
FTD	-	Fisheries Terminal Division
FTO	-	Fisheries Terminal Organization
MFV	-	Mechanized Fishing Vessel
OBM	-	Outboard Motor

Office of Director-General
Operations Evaluation

June 21, 1991

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Project Performance Audit Report on India Gujarat
Fisheries Project (Loan 1394-IN/Credit 695-IN)
and Andhra Pradesh Fisheries Project (Credit 815-IN)

Attached, for information, is a copy of a report entitled "Project Performance Audit Report on India Gujarat Fisheries Project (Loan 1394-IN/Credit 695-IN) and Andhra Pradesh Fisheries Project (Credit 815-IN)" prepared by the Operations Evaluation Department.

Attachment

A handwritten signature in dark ink, appearing to be 'L. P. ...', is located in the lower right quadrant of the page.

PROJECT PERFORMANCE AUDIT REPORTINDIAGUJARAT FISHERIES PROJECT
(LOAN 1394-IN/CREDIT 695-IN)

AND

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Maps - IBRD No. 12317R
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PROJECT PERFORMANCE AUDIT REPORT

INDIA

**GUJARAT FISHERIES PROJECT
(LOAN 1394-IN/CREDIT 693-IN)**

AND

**ANDHRA PRADESH FISHERIES PROJECT
(CREDIT 815-IN)**

PREFACE

1. This is a Project Performance Audit Report (PPAR) on the Gujarat and Andhra Pradesh Fisheries Projects which were the first and second World Bank financed projects for fisheries development in the Bank's then South Asia Region. The two projects had a common origin, almost identical objectives and were implemented concurrently, so it was decided that they should be audited as a group rather than individually.
2. The Gujarat project involved an IDA credit amounting to US\$4.0 million (m) and loan totalling US\$14.0 m, to the Government of India (GOI) and Government of Gujarat State (GOG), for the modernization and expansion of two fishing harbors and associated shore facilities, financing additional motorized fishing vessels, modernization of traditional fishing craft, and the construction of feeder roads to and improvement of living conditions in a number of fishing villages. The credit was approved in March 1977 and became effective on schedule in June 1977. The closing date of June 30, 1983 was extended to June 30, 1984.
3. The Andhra Pradesh credit was approved in May 1978 and made effective in October 1978, for a total of US\$17.5 m to GOI and the Government of Andhra Pradesh State (GOAP), for the development of three fishing harbors and shore facilities, fishing vessels and construction of fishing village access roads. The credit accounts were closed at the end of March 1985, having been kept open for 6 months after the official credit closing date of September 30, 1984.
4. This PPAR is based on the respective Project Completion Reports, Staff Appraisal and the President's Reports, loan documents and minutes of the relevant Executive Directors' meetings, project files and discussions with Bank staff. In addition, an OED mission visited India in May 1990 to discuss the outcome and impact of the project and the effectiveness of the Bank's assistance with GOI officials and with staff, beneficiaries and others in the two States. The wholehearted interest and cooperation of all concerned greatly facilitated the preparation of this report and is most gratefully acknowledged.
5. The two PCRs (Report Nos. 6842 and 6843 dated June 24, 1987) were prepared by an FAO/CP mission which, at IDA's request, visited India during March 1986. They provide comprehensive analyses of project experience and of their

status following project closure. A number of lessons which were apparent by then are also highlighted in the PCR's. The audit memorandum gives further consideration to some of the PCR conclusions and to issues arising from the outcome and subsequent impact of the two projects, in the belief that they will have application to other Bank supported fisheries projects. Inadequacies in the preparation and appraisal process are discussed, with particular regard to credit arrangements for fishermen and planning for civil engineering harbor works. The choice of fishing craft intended for use by artisanal fishermen is also examined.

6. The draft PPAR was sent to the Borrower for comments. The comments received from the Department of Agriculture are reproduced as Attachment I to the PPAR.

PROJECT PERFORMANCE AUDIT REPORT

INDIA

**GUJARAT FISHERIES PROJECT
(LOAN 1394-IN/CREDIT 695-IN)**

BASIC DATA SHEET

KEY PROJECT DATA

	<u>Appraisal Estimate</u>	<u>Actual or Estimated Actual</u>	<u>Actual as % of Appraisal Estimate</u>
Total Project Costs (US\$ million)	38.0	34.9	92
Credit Amount (US\$ million)	4.0	4.0	100
Loan Amount (US\$ million)	14.0	12.24	87
Date of Board Approval	03/31/77	03/31/77	
Date of Effectiveness	06/19/77	06/19/77	
Date Physical Components Completed		06/86	
Closing Date	06/30/83	06/30/84	
Economic Rate of Return	24.0	16.0	
Institutional Performance		Fair	
Fishery Performance		Good	

STAFF INPUTS (staff weeks)

	<u>FY76</u>	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>Total</u>
Preappraisal	5.0												5.0
Appraisal	37.0	18.0											55.8
Negotiation		14.0											14.0
Supervision		3.5	7.5	6.3	11.9	5.1	14.3	8.9	3.9		8.1		69.5
Other (HQ and NDO)		12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	6.0	2.0	1.0	109.0
Total	42.8	48.0	20.0	18.8	24.4	17.6	26.8	21.4	16.4	6.0	10.1	1.0	253.3

CUMULATIVE ESTIMATED AND ACTUAL DISBURSEMENTS

	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>
Appraisal Estimate (US\$ million)	0.2	3.0	8.3	14.0	17.4	18.0	18.0	18.0
Actual (US\$ million)	-	1.1	8.6	10.1	12.0	13.9	13.9	16.42
Actual as % of Appraisal Estimate	0	37	43	72	69	77	77	91
Date of Final Disbursement: May 10, 1985								

MISSION DATA

<u>Mission</u>	<u>Date</u> (mo/yr)	<u>No.</u> <u>of</u> <u>Persons</u>	<u>Days</u> <u>in</u> <u>Field</u>	<u>Specializations</u> <u>Represented</u> <u>/a</u>	<u>Performance</u> <u>Rating</u> <u>/b</u>	<u>Trend</u> <u>/c</u>	<u>Types of</u> <u>Problems</u> <u>/d</u>
Reconnaissance	11-12/74	4	120	B,D,E			
Ident./Prep.	07-08/75	6	189	B,D,E			
Appraisal	05-06/76	7	189	A,B,D,D,E,G,F			
Supervision 1	06/77	1	10	A	1	1	-
Supervision 2	03/78	3	30	A,D,E	1	1	MT
Supervision 3	11/78	3	24	A,D	1	1	-
Supervision 4	07/79	3	36	B,D,E	1	1	M
Supervision 5	02/80	2	16	D,E	2	2	OM
Supervision 6	10-11/80	2	18	D,E	2	2	MF
Supervision 7	07/81	2	28	D,E	2	1	MF
Supervision 8	02/82	3	36	B,H	2	2	MF
Supervision 9	09-10/82	3	24	B,D,E	2	1	MF
Supervision 10	04/83	2	12	D,E	3	1	MF
Supervision 11	10/83	2	12	D,E	2	2	MT
Completion	03/86	3	33	B,D,E			

OTHER PROJECT DATA

Borrower: Government of India/Government of Gujarat
Fiscal Year of Borrower: April 1 - March 31

CURRENCY EXCHANGE RATES

Name of Currency:		Rupee (Rs)
Appraisal Year Average:		US\$1 = Rs 9.00
Intervening Years Average:	FY78	US\$1 = Rs 8.20
	FY79	US\$1 = Rs 8.10
	FY80	US\$1 = Rs 7.90
	FY81	US\$1 = Rs 8.95
	FY82	US\$1 = Rs 9.65
	FY83	US\$1 = Rs 10.30
	FY84	US\$1 = Rs 11.90
	FY85	US\$1 = Rs 12.20
	FY86	US\$1 = Rs 12.40
	May 1990	US\$1 = Rs 17.30

-
- /a A = Agro-Industry, B = Economics, C = Credit, D = Ports Civil Engineering,
E = Fisheries, F = Fishing Vessels Expert, G = Shore Facilities Expert,
H = Loan Officer.
- /b 1 = Problem free or Minor Problems; 2 = Moderate Problems; 3 = Major Problems.
- /c 1 = Improving; 2 = Stationary; 3 = Deteriorating.
- /d F = Financial; M = Managerial; T = Technical; O = Other.

PROJECT PERFORMANCE AUDIT REPORT

INDIA

ANDHRA PRADESH FISHERIES PROJECT
(CREDIT 815-IN)

BASIC DATA SHEET

KEY PROJECT DATA

	<u>Appraisal Estimate</u>	<u>Actual or Estimated Actual</u>	<u>Actual as % of Appraisal Estimate</u>
Total Project Costs (US\$ million)	36.5	25.66	70
Credit Amount (US\$ million)	17.5	9.98	57
Date of Board Approval	05/30/78	05/30/78	
Date of Effectiveness	10/31/78	10/31/78	
Date Physical Components Completed	03/82	06/86	
Closing Date	09/30/84	06/85 /a	
Economic Rate of Return	35.0	not calculated /b	
Institutional Performance		Fair	
Fishery Performance		Good	

STAFF INPUTS (staff weeks)

	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>Total</u>
Preappraisal	2.0	3.0										5.0
Appraisal		46.2										46.2
Negotiation		14.0										14.0
Supervision			3.5	9.3	22.2	6.3	12.0	3.9				57.2
Other (HQ and NDO)			12.5	12.5	12.5	12.5	12.5	12.5	6.0	2.0	1.0	84.0
Total	2.0	63.2	16.0	21.8	34.7	18.8	24.5	16.4	6.0	2.0	1.0	206.4

CUMULATIVE ESTIMATED AND ACTUAL DISBURSEMENTS

	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>
Appraisal Estimate (US\$ million)	0.5	3.79	10.42	15.66	16.6	17.5	17.50
Actual (US\$ million)	-	1.00	2.90	6.10	7.3	8.8	9.98
Actual as % of Appraisal Estimate	0	26	28	39	44	50	57
Date of Final Disbursement: May 10, 1985							

MISSION DATA

<u>Mission</u>	<u>Date</u> <u>(mo/yr)</u>	<u>No.</u> <u>of</u> <u>Persons</u>	<u>Days</u> <u>in</u> <u>Field</u>	<u>Specializations</u> <u>Represented</u> <u>/c</u>	<u>Performance</u> <u>Rating</u> <u>/d</u>	<u>Trend</u> <u>/e</u>	<u>Types of</u> <u>Problems</u> <u>/f</u>
Reconnaissance	11-12/74	4	90	B,D,F			
Ident./Prep.	07-08/75	6	189	B,D,F			
Appraisal	09-10/77	7	161	B,D,E,F,G			
Supervision 1	09/78	2	10	B,F	1	1	-
Supervision 2	07/79	3	21	D,F	1	1	-
Supervision 3	03/80	2	18	D,F	2	1	T
Supervision 4	07/80	5	60	A,B,D,F	2	1	F
Supervision 5	02-03/81	3	36	C,D,F	2	1	F
Supervision 6	01-02/82	2	24	B,D	2	1	F
Supervision 7	10/82	3	33	B,D,F	2	1	F
Supervision 8	03-04/83	2	12	D,F	2	1	F
Supervision 9	10/83	2	12	D,F	2	3	MF
Completion	03/86	3	33	B,F			

OTHER PROJECT DATA

Borrower: Government of India/Government of Andhra Pradesh
Fiscal Year of Borrower: April 1 - March 31

CURRENCY EXCHANGE RATES

Name of Currency:		Rupee (Rs)
Appraisal Year Average:		US\$1 = Rs 8.60
Intervening Years Average:	FY78	US\$1 = Rs 8.20
	FY79	US\$1 = Rs 8.10
	FY80	US\$1 = Rs 7.90
	FY81	US\$1 = Rs 8.95
	FY82	US\$1 = Rs 9.65
	FY83	US\$1 = Rs 10.30
	FY84	US\$1 = Rs 11.90
	FY85	US\$1 = Rs 12.20
	FY86	US\$1 = Rs 12.40
	May 1990	US\$1 = Rs 17.30

-
- /a Credit was kept open informally for an extra six months.
- /b Data on benefits not available to allow for economic re-evaluation.
- /c A = Aquaculture, B = Economics, C = Financial Analysis, D = Ports Civil Engineering,
E = Credit, F = Fisheries, G = Naval Architecture.
- /d 1 = Problem free or Minor Problems; 2 = Moderate Problems; 3 = Major Problems.
- /e 1 = Improving; 2 = Stationary; 3 = Deteriorating.
- /f F = Financial; M = Managerial; T = Technical.

PROJECT PERFORMANCE AUDIT REPORT

INDIA

GUJARAT FISHERIES PROJECT
(LOAN 1394-IN/CREDIT 695-IN)

AND

ANDHRA PRADESH FISHERIES PROJECT
(CREDIT 815-IN)

EVALUATION SUMMARY

Introduction

1. India's marine fishing industry has undergone rapid expansion since the mid-sixties. During the decade 1966-1975, prior to preparation of the two World Bank funded projects, marine catches increased from 0.8 to 1.6 million tons per annum, concurrently with expansion of the mechanized fishing fleet from just over three thousand to eleven thousand vessels. However, such rapid growth quickly exceeded the capacities of available infrastructure and the fishing harbors soon became overcrowded and congested, ice supplies were often inadequate and fish handling/processing space ashore proved insufficient and often unhygienic, with detrimental effects on fish quality and value especially on export markets.

2. Available information suggested that the marine fish resources were still underexploited, especially the pelagic stocks beyond the continental shelf, with potential for at least doubling the 1975 catch of 1.6 million tons. In consequence, the State governments and GOI with UNDP/FAO and Swedish (SIDA) assistance, commissioned studies aimed at identifying sites for fish-

ing harbor development or expansion, to relieve the existing congestion and enable further increases in fleet size as required to attain maximum sustainable levels of catch and fishing effort. These studies covered the coastlines of Gujarat, Andhra Pradesh, Kerala, Tamil Nadu, Karnataka and Maharashtra States, in the hope of identifying an integrated project covering the whole area. Subsequent FAO/CP reconnaissance and preparation missions concluded that such an approach would be too unwieldy and the project objectives were progressively narrowed down to a basic one state per project basis, with the Gujarat and Andhra Pradesh fisheries projects as the first two.

Project Design and Objectives

(1) Gujarat Fisheries Project

3. As approved by the Bank's Board on March 31, 1977, the project was designed to overcome congestion at the existing harbors of Veraval and Mangrol by expanding and modernizing the vessel berthing and on-shore fish handling facilities. In addition the project aimed to stimulate production by financing more

motorized fishing vessels and traditional artisanal fishing canoes with outboard engines, coupled with improvements to a number of coastal villages. The main components were: (a) improvement of two major fishing harbors, Veraval and Mangrol, in northwest India; (b) improvement of shore facilities and services at these two harbors; (c) provision of credit to entrepreneurs to establish fish processing, freezing and ice plants at the harbors; (d) construction of 270 MFVs and 350 outboard powered canoes for sale on credit to fishermen and cooperatives; (e) provision of two net-making machines for the central fisheries agency, GFCCA; (f) technical assistance for test fishing and marketing studies and to facilitate project implementation. Total project costs were estimated at US\$38 million of which the World Bank provided an IBRD loan of US\$14 million and an IDA credit of US\$4 million. The balance was to be funded by GOI/GOG, NABARD, participating banks and borrowers.

(2) Andhra Pradesh Fisheries Project

4. The Andhra Pradesh Project was approved by the Board on May 30, 1978 with the main objectives of increasing marine fish production by upgrading three harbors in southeast India, providing credit for additional fishing craft, establishing fish processing facilities and increasing the productivity of artisanal fishing communities along the coast by constructing access roads to fishing villages. The principal features of the project were: (a) improvement of the fishing harbors at Kakinada, Visakhapatnam and Nizampatnam; (b) construction of coastal fishing village access roads in three districts; (c) provision for 360 MFVs and 60 non-mechanized

craft intended for sale to fishermen/cooperatives on credit; (d) credit for seafood processing facilities at Visakhapatnam and Nizampatnam; (e) technical assistance providing harbor engineering and naval architecture consultants, overseas study tours for local fisheries staff and construction of two experimental 23 m. wooden hulled shrimp trawlers. Total project costs were estimated at US\$36.5 million of which the IDA credit provided US\$17.5 million. The balance of funding was to be provided by GOI/-GOAP, NABARD, participating banks and borrowers.

Implementation Experience

5. The Gujarat project was made effective on June 19, 1977, just over a year before the Andhra Pradesh project, which became effective on October 31, 1978, exactly on schedule in both cases. Despite prompt action by the two States to initiate implementation, both projects ran into difficulties shortly thereafter especially as regards their harbor works components. These problems arose because of inadequate pre-appraisal site research and consequent faulty design work on which project plans and costings were based. The necessary additional investigations and altered specifications caused serious time and cost overruns to the harbor developments and also had knock-on effects on other components. The contractors involved in the harbor construction work incurred large additional costs resulting from the altered plans and time overruns, which were not adequately covered in their contracts, which necessitated arbitration appeals but in the process cost even more time.

6. Completion of the Gujarat project harbor works was not finally achieved until June 1986, some 4-1/2 years later than the SAR target of December 1981 and two years after the formal closing date. The Andhra Pradesh credit was formally closed in March 1985, after a six-month extension, but whereas all the work planned for Visakhapatnam and Kakinada harbors was completed by April 1987, some residual work at Nizampatnam was still in progress in 1990, during the audit visit.

7. Commercial banks in both States proved unwilling after a short while, to continue their participation in the fishing vessel credit program, because of their unpreparedness and lack of experience in lending to the smaller scale sections of the fishing industry and for fear of growing arrears. In consequence only 50% of the intended additional MFVs were built in Gujarat and barely 33% in Andhra Pradesh. Efforts were made during implementation to persuade the banks to establish more appropriate facilities and procedures to ease loan recovery, but to no avail possibly because no credit expertise was deployed in any of the supervision missions and it had not been considered as a topic warranting technical assistance.

8. All of the IDA credit for Gujarat was disbursed but US\$1.58 million of the IBRD loan was cancelled. In the case of Andhra Pradesh, only US\$9.98 million of the US\$17.5 million total credit was disbursed, and the balance of US\$7.52 million was cancelled.

9. It seems clear, in both cases, that unrealistic targets were set at appraisal which took insufficient account of the inadequate nature of the preparatory engineering design

work and little heed of the potentially very damaging effect of tropical storms to which both project areas are particularly prone. The Gujarat project area was hit by three hurricanes during the implementation period, all of which caused damage to construction work in progress and consequent additional delay and cost whilst repairs were effected. The Andhra Pradesh coast frequently experiences cyclones of varying severity, two of which caused damage at Kakinada in 1981 and 1985. A bad one in November 1977, just after the appraisal visit, caused a death toll exceeding 10,000 people, whilst the most recent storm, in May 1990 had wind speeds up to 250 km/hr and resulted in severe damage to structures at Nizampatnam fishing harbor and widespread devastation elsewhere in Andhra Pradesh.

Results

(1) Gujarat Fisheries Project

10. Despite the 4-1/2 year delay in completing the harbor works at Veraval and Mangrol, the project succeeded as intended, in alleviating excessive overcrowding at the two harbors and in creating modern quayside facilities for handling and disposing of the catch expeditiously and in good condition. A Fisheries Terminal Division was created within the State fisheries administration to manage the operation of the fishing harbors, including regulation of harbor and market users and the gathering, compilation and dissemination of landings and marketing information.

11. Other achievements were: (i) 137 new MFVs were financed; (ii) 428 outboard motors were supplied; (iii) two fishing net looms were procured

to expand GFCCA's net making capacity; (iv) the test fishing survey and fish marketing study were completed; (v) 17.4 km of access roads were built to serve 7 artisanal fishing villages, where working sheds were also built and piped water supplies provided in 5 cases. The plan to supply 350 wooden dug-out canoes was cancelled in favor of developing an FRP version, of which some 40 were in use by completion. The provision of credit for new fish processing and ice plant, etc. was cancelled because adequate privately financed processing capacity became available shortly after appraisal thus obviating the need for any further public sector investment in processing plant.

12. The economic rate of return (ERR) for the project as a whole, was re-estimated by the Completion Mission at 16%, compared to the SAR estimate of 24%.

(2) Andhra Pradesh Fisheries Project

13. Harbor development work financed under the project at Visakhapatnam was completed by 1982 and eased the severe congestion experienced until then by the fishing fleet based there. Construction of the new fishing port at Kakinada was, as noted above, subject to major delays and was not completed until April 1987. Project funded work at Nizampatnam, where a completely new fishing port was built near the mouth of an existing undeveloped tidal creek, was completed by mid-1986 but additional work, including the construction of training walls, was found to be necessary to increase the depth of water at the harbor entrance and thereby improve access. This extra work was funded by GOAP outwith the project

and was still in progress, nearing completion, during the audit visit but pending its completion the new port facilities are not fully available for use by the fishing fleet.

14. Other results were: (i) 151 km of village access roads were constructed, which was 70% of the SAR target of 215 km; (ii) 137 new mechanized fishing vessels were financed, which was only 33% of the original target because of the refusal by commercial participating banks to continue lending; (iii) a study tour of related fisheries developments in south-east Asian countries was undertaken by 10 GOAP fisheries staff as planned; (iv) the two experimental 23 m wooden trawlers were built, after inordinate delays, and entered service eventually in July 1990, nearly 7 years late; (v) a piped water supply system for Nizampatnam village and the new fishing harbor was installed as planned, but provision for setting up new seafood processing plants in Visakhapatnam and Nizampatnam was cancelled.

15. The Completion Mission was unable to re-estimate the economic rate of return for the Andhra Pradesh project (35% at appraisal), owing to the non-completion by then of the harbor works at Kakinada and Nizampatnam. The audit also found that Nizampatnam harbor was still not fully operational, that Kakinada harbor still needs additional on-shore development to enable the new port facilities to be used to full advantage and that further expansion of berthing and landing facilities at Visakhapatnam has already had to be provided to accommodate the continuing growth in fleet size. Results since completion suggest that the village access road component has proved especially beneficial.

Sustainability

(1) Gujarat Fisheries Project

16. At the time of the Completion Mission in March 1986, Mangrol fishing harbor was complete in all respects and in full use, whereas at Veraval work was still in progress and some months away from finalization. Nevertheless, the prospects for sustainability did appear good and despite some disappointing aspects, other beneficial impacts were already emerging and were clearly apparent to the audit mission four years later.

17. During the 12 years from 1977 to 1989, the fleet of MFVs in the overall project area increased by 81% from 685 to 1242 vessels, the motorized canoe fleet expanded by more than 100% from 740 to 1550 craft and the volume of annual fish landings grew by nearly 170%, from 73,034 mt to 196,359 tons. Although the negative response by commercial banks to credit for expanding the fishing fleet was a disappointment and resulted in the project financing only 137 new MFVs instead of the intended 270, it is clear from the fact that the fleet has expanded so greatly, that many more new craft must have been constructed using other sources of credit, in addition to vessels that may have been attracted into the area from elsewhere because of the improved facilities.

18. The quayside fish auction halls and handling spaces at both Veraval and Mangrol give an impression of cleanliness and good organization, with ample ice supplies and frequent washing down all contributing to better quality fish and higher prices to fishermen as well as to fish traders. Similar benefits have also accrued to artisanal fishermen at coastal villages provided with

access roads under the project, whose catches can now be easily transported each day to the central markets, thus encouraging greater fishing effort, bigger catches and higher incomes. The enhanced affluence which is now apparent in these erstwhile isolated and impoverished communities, has also triggered social benefits in the form of schools, health centers, improved housing and public transport, etc., which have transformed the population's living conditions.

19. Among its original aims, the project was to have provided 350 traditional wooden dug-out canoes, but was prevented from doing so when Government restrictions were imposed on the use of hardwood logs for this purpose. It was decided instead to use the funds to develop a prototype fibreglass (FRP) canoe as a substitute for the wooden version. The PCR records that 29 FRP canoes were produced under the project, several of which were trial models for testing by fishermen who suggested various modifications for incorporation into the production design. The audit mission, in May 1990, found that in the four years since the visit by the Completion Mission, the GFCCA boatyard in Veraval has built and sold 350 of these canoes, with a further 60 on order. A private yard in Veraval has produced 250 FRP canoes of similar design and a Government owned yard in Mangrol (GFDC), is building these canoes at a rate of 7 per month and has sold 263 of them to date. It is certain that this element of the project is now firmly established and has been a resounding success. It is also interesting to note that each canoe, fully rigged with gear and outboard motor, costs about Rs 65,000 and that most of the finance for the 863 canoes sold to date appears to have been raised by fishermen from tradi-

tional sources rather than from officially sponsored loan schemes.

20. Although investment in public sector fish processing was reduced and most of the provision in project estimates under this heading was cancelled, the private sector was stimulated by the expanded harbor facilities to develop fish processing capacity in the two ports, to levels beyond SAR targets for the project. According to one processor, the bottleneck now is transportation to Bombay and cold-storage capacity in Bombay pending onward shipment to export markets because of the lack of suitable deep-water commercial port facilities in Gujarat State to handle such refrigerated/frozen exports.

21. Although the SAR contains very little reference to the risks of overfishing, a member of the Appraisal Mission did report separately (Project files, Vol. 11), that there was a downward trend in the annual average catch per boat over the period 1960 to 1975. Table 5(a) is based on data collected by the Fisheries Terminal Division in Veraval between 1978/79 and 1989/90 and also indicates that this downward trend in catch rates is continuing, whereas total catch is still increasing year by year concurrently with the growth in fleet size. Thus, there is no immediate risk of a collapse in the shrimp stock, but development has reached a stage where it will need very careful monitoring from here-on. The responsibility for such work rests with the Gujarat Marine Research Station at Okha and Central Government agencies such as the GOI Fishery Survey of India, based in Bombay.

(2) Andhra Pradesh Fisheries Project

22. The PCR viewed sustainability as being uncertain because of the protracted delay in completing Kakinada and Nizampatnam harbors, but the mission acknowledged that by the time of their visit in March 1986, there were indications that the project was having a positive impact on the development of Indian east coast fisheries. In particular, the PCR cited a substantial growth in the fishing fleet, increased average earnings per vessel and an expansion of private sector fish processing capacity as evidence of this impact. The coastal village road component provided all-weather access to the 91,000 population of 98 previously isolated villages and has proved especially beneficial to the living conditions of these communities.

23. Matters have progressed during the four years since the PCR visit and the audit, in May 1990, was able to confirm that the MFV fleet has more than doubled in size and, despite some uncertainty about precise numbers, now totals about 1,100 vessels compared to 500 when the project was appraised in late-1977. Kakinada fishing harbor construction was finally completed during 1987 and the new facilities were formally inaugurated and made operational in 1988. However, although the fleet lands its catch and bunkers at the new port, fish processing still takes place at the old site, so that impact is still only partial.

24. Construction of training walls at the entrance of Nizampatnam harbor was still in progress during the audit visit and was due for completion by December, 1990 when it was expected that the harbor would be-

come operational. Sadly, a severe cyclone devastated much of the Andhra Pradesh coast during May 1990 and caused considerable damage to the new harbor facilities. The cost of and time needed for repairs will inevitably cause further delay before Nizampatnam can be made fully operational and in the meantime, its impact remains only marginal, although fleet growth has already outstripped the designed capacity.

25. Expansion of the fleet of trawlers and MFVs at Visakhapatnam also exceeded harbor capacity shortly after the project financed works were completed and has necessitated the construction of additional berthing quays to accommodate 34 trawlers. This work, which is estimated to cost Rs. 454.27 lakhs, commenced during 1989 and should be finished by the end of 1991. In the meantime, the rest of the fishing harbor, although congested, is working normally. The project has undoubtedly had a substantial impact at Visakhapatnam, but given the large investment there, it was rather disappointing to observe that fish was still being unloaded and handled in overcrowded and not very hygienic conditions, and with little sign of any direction or control being exercised by the Fisheries Terminal Organization.

26. Fisheries Terminal Organizations (FTOs) were established under the terms of the projects, by the respective Fisheries Departments, at each of the fishing harbor developments in both States. Gujarat had the benefit of a technical assistance team to assist the FTOs in establishing their systems for managing the berthing and landing facilities, auction halls, gear sheds, diesel and water supply, ice crushing facilities, recording and accounting, etc., all of which appears

to be working very well. The Andhra Pradesh project did not contain such provision and although FTOs have been established at all three ports, they do not seem to be functioning, so far, as effectively as their Gujarat counterparts. Audit considers that there should be more interchange of experience through study visits and discussions between FTO staff both within and between the two States. It is understood that such exchange visits have been a rarity hitherto.

27. It was expected that the construction of two trial 23 m. wooden shrimp trawlers would have demonstrated the possibility of substituting locally built craft for imported steel-hulled trawlers. Inordinate delays, some but by no means all of which was caused by unsatisfactory performance by the consultant naval architect, have resulted in the two vessels not starting operations until July 1990. It has therefore not been possible to undertake any evaluation hitherto and impact to date has been zero.

28. As was also the case with the Gujarat project, the village access roads component has had a dramatic beneficial impact on the communities living in these hitherto isolated villages. All-weather access means that fish traders can now visit daily and purchase fresh fish at the landing beach, whereas previously the fishermen had to salt and dry their catch and carry it on foot or by bicycle to market for sale. The changes now encourage greater fishing effort leading to increased incomes and better living conditions for fishermen and their families. However, all is at the mercy of the weather and the cyclone of May 1990, which was one of the worse on record, swept away many boats, damaged houses and breached roads and bridg-

es. Thankfully, the fishing community death toll was only 32, in contrast to past occasions when many thousands were killed, but the devastation is a major set-back which will take much time and money to repair.

29. The ability of the project to sustain its principal benefits is contingent on completion of the harbors and on designing the structures and organizing their construction in ways that minimize the risk of cyclone damage. Although bad cyclones do not hit the Andhra Pradesh coast every year and they vary in severity, there have been 68 cyclones in the past 98 years. There is in consequence, a 70% risk of at least one such storm every year and it is therefore surprising that there is no mention of this risk, or of any precautions that might be taken, either in the appraisal or completion reports.

30. Finally, it is also the case that project sustainability is dependent on adequate fish stocks and on the regulation of fishing effort and catches to safe and sustainable levels. The audit noted that although there seems to be no imminent risk of overfishing and there are existing systems for monitoring stocks and production, there are also some warning signals. MFV and trawler owners at Visakhapatnam stated that daily shrimp catches per vessel are now only half as large as they were ten years ago, and that vessels were having to fish in deeper water, so that catching costs were also higher. On the other hand, the prices received for shrimp catches have increased five-fold in the same period. Nevertheless, all concerned recognize the need to diversify part of the fishing effort to other fish stocks that are still underutilized in order to safeguard

the future viability of shrimp trawling, but nobody wants to be the one to make the change.

Findings and Lessons

31. The principal lesson in both projects was that engineering site investigation and design work for major construction schemes, such as harbors, should be completed prior to appraisal to the stage where design and construction specifications can form the basis for realistic cost estimates and tendering, thereby avoiding the risk of subsequent adverse surprises such as occurred at Veraval and Kakinada. If it is not possible to complete the design work beforehand, or if any doubts persist during appraisal, then the project must include the necessary provision and time schedules should be adjusted to enable such work to be done in a pre-implementation phase, prior to contract tendering. In fact instructions along these lines were issued in the Bank's Operational Manual Statement No. 2.28 of October 1978, too late by 18 months to have been of any help to the Gujarat project, but only 5 months after Board Approval of the Andhra Pradesh Credit. The directives must have been based on a number of cases over a period, in which similar problems were experienced, the background to which should have been known to the Region even if not necessarily to the Board. In the audit's view this would have justified a more critical review of the evidence before the project was accorded Board approval.

32. Project preparation/appraisal also proved inadequate in its failure to recognize that the vulnerability of both areas to severe tropical storms were major risks to project implementation and sustain-

ability. The problem is perhaps more acute in Andhra Pradesh, but it is remarkable that neither of the appraisal reports contain any reference to storm risks or to the need for harbor structures, including quayside buildings such as market halls, to be designed to withstand hurricane force winds. Even the two PCRs make only passing reference to damage and construction delays caused by three hurricanes affecting the Gujarat project area and two cyclones hitting the Andhra Pradesh coast during the implementation period.

33. Among other lessons it was noted that both projects experienced substantial delays because the cost escalation clauses in construction contracts were inadequate or too ambiguous to enable agreements to be reached with the contractors without recourse to very lengthy arbitration procedures. It is understood that such situations are especially frequent in India but the audit believes that much time and money could be saved if the Bank paid more attention to the wording of escalation clauses whenever such contracts are to be approved or endorsed.

34. The intended increase in fishing effort in both project areas by means of credit for additional mechanized fishing vessels, was frustrated by the commercial banks' refusal to continue lending because of fears of escalating arrears. It is clear that the banks concerned had little understanding of the fisheries sector or of the particular conditions and problems governing credit recovery from fishermen and were ill-prepared for the task so that their reaction is not surprising. A credit specialist was included in each of the appraisal teams but at no other time and the project therefore lacked the means

to advise and encourage the banks to persist. The audit considers that this component was badly prepared in both cases and that it would have been a very suitable and rewarding role for technical assistance to have guided NABARD and the participating banks in setting up appropriate facilities for sub-loan appraisal and recovery, in line with and responsive to the fishermen's way of life.

35. More attention is needed in future to the status of fish resources and to provision for effective monitoring of the progressive impact of project developments on the stocks, to ensure against risks of exceeding safe sustainable levels of exploitation.

36. Audit observed that supplies of timber suitable for boat building and for maintaining the existing fleet, are becoming very scarce and increasingly costly. There is need to encourage better coordination between fisheries and forestry authorities to plan for both short and long term future supplies.

37. When dealing with the supply of boat engines to fishermen, a more flexible approach is needed rather than insistence on single suppliers selected by means of international competitive bidding. Fishermen often have strong preferences, based on experience and should be given some choice in the matter.

38. In a country as large and as varied as India, any technical assistance component aimed at up-grading and widening the experience of local staff should include the possibility of exchange visits and study tours to other States, as well as to overseas countries. There is a wealth of knowledge and in-country

expertise but it is not evenly distributed.

Overall Assessment

39. Audit regards both projects as having performed significantly better than appears to have been believed hitherto. All five harbors were built, albeit over a longer time span and at higher cost than was planned; the fishing fleets have continued to expand and product quality and value has been greatly enhanced in the project area; the coastal village access road components and the artisanal fishing canoe development program in Gujarat were highly successful and virtually all the other services and equipment which were intended, have been provided. Even after the project accounts were closed, following IDA's refusal to extend the closing dates any further, GOG and GOAP managed to find savings to complete the construction program and make good the shortfall caused by cancellation of the undisbursed balances of Bank funds. Audit considers that this demonstrates the commitment of both state governments to the attainment of project objectives.

40. Most of the problems encountered were attributable to inadequate preparation and premature appraisal which, in the audit's opinion, failed to take sufficient account of the lack of local site data, ignored the risk of tropical storms and their likely effect, and overestimated the ability of NABARD and the local banks to operate the intended fishing vessel credit programs which were the only aspects of both projects which really failed.

41. The original proposals for coastal fisheries development in India included Kerala, Tamil Nadu,

Karnataka and Maharashtra States, in addition to Gujarat and Andhra Pradesh, but there has been no follow-up on the others. Audit considers that the outcome of these two projects are good enough to more than justify taking another look at the current developmental needs of the fishing industry in all the States concerned.

PROJECT PERFORMANCE AUDIT REPORT

INDIA

GUJARAT FISHERIES PROJECT (LOAN 1394-IN/CREDIT 695-IN)

AND

ANDHRA PRADESH FISHERIES PROJECT (CREDIT 815-IN)

A. GUJARAT FISHERIES PROJECT

I. BACKGROUND

Context and Project Objectives

1.1 India's marine fishing industry has developed rapidly since the mid-sixties and especially since 1976, by which time annual sea fish production had increased to an estimated 1.6 million tons, the sector has been accorded high priority for development by the Government of India (GOI) and the State governments concerned. However, the rapid growth in size and numbers of mechanized fishing vessels soon exceeded the capacity of existing harbors and the increased volume of catches swamped the inadequate onshore infrastructure. Ice supplies and fish handling and processing facilities proved inadequate and often unhygienic, with adverse effects on fish quality and value.

1.2 It was believed that the marine fish stocks had potential for at least doubling the 1975/76 catch of 1.6 million tons, so the State governments and GOI sought UNDP/FAO, Swedish and World Bank assistance in a program aimed at fishing harbor development and expansion. The program was intended to relieve the existing congestion and permit further increases in fleet size, as required to attain maximum sustainable levels of catch and fishing effort. The Gujarat project was the first IDA assisted fishery project in South Asia, and was intended to be the initial phase in a series of projects covering other Indian States.

1.3 The main objectives of the project were to relieve over-crowding at two existing fishing harbors in Gujarat, improve marketing channels and facilities for handling and processing catches and build up the institutional capability for managing fishing harbors. In addition the project was to finance additional fishing vessels and initiate most improvements in living conditions in a number of artisanal fishing villages. Knowledge of the fishing potential and of market outlets for fish were to be improved by means of appropriate studies.

Design

1.4 The design of the project, as approved by the Board in March 1977, included the following components:

- (a) improvements of the fishing harbors at Mangrol and Veraval to provide better shelter for a larger fleet, and provision of complementary modern shore facilities, e.g. auction halls, fish drying areas, power, water and fuel supplies, etc.;
- (b) provision of credit for fish processing, freezing and ice plants at the two harbors;
- (c) construction and equipping of 270 x 14.8 m MFVs for sale on credit/hire purchase to fishermen;
- (d) assistance to traditional fisheries by the provision, on credit, of 350 outboard powered canoes, a further 1050 outboard motors, access roads, piped water supplies and fish marketing sheds to serve 8 fishing villages, together with 4 trucks for use by GFCCA in marketing village catches;
- (e) provision of two net making machines for GFCCA; and
- (f) technical assistance for: (i) test fishing surveys off the coasts of Gujarat and Andhra Pradesh; (ii) a fish marketing study; and (iii) consultants for project implementation, totalling 50 man months, comprising harbor engineer, rock excavation specialist, fisheries resource management expert, and harbor management specialist.

Finance Plan and Organization

1.5 The project, as submitted for Board approval, was estimated to cost an amount equivalent to US\$14 M, of which the IDA credit totalled US\$4 M, supplemented by an IBRD loan of US\$14 M. Allocation of the total estimate was approximately 50% to the harbor improvement component, 20% to the cost of 270 MFVs and about 10% each for shore facilities at the fishing harbors, to the traditional fishing component and for technical assistance.

1.6 GOI was responsible for the test fishing survey and GOG for all the other components, with refinance for credit operations based on a Banking Plan provided by NABARD. The Commissioner of Fisheries in the Gujarat State Department of Ports and Fisheries (DPF) was Project Coordinator and also secretary of the Project Supervision Committee which was established at state level and which delegated responsibilities to appropriate state agencies, such as the Gujarat Maritime Board to supervise harbor construction and GFCCA to procure the fishing boats and engines, etc. The Commissionerate of Fisheries (GCF) was responsible for setting up and staffing the Fisheries Terminal Organization to manage the two harbors.

Pre-implementation Processing

1.7 GOI submitted broad proposals to the World Bank (WB) during 1974, as a result of which, an FAO/WB Cooperative Program (CP) reconnaissance mission visited India in November/December 1974 to review marine fisheries proposals for the states of Andhra Pradesh, Kerala, Tamil Nadu, Gujarat, Karnataka and Maharashtra. This was followed by a CP Identification/Preparation mission in July/August 1975, when agreement was reached with GOI for a project involving harbor and fishing vessel improvements at seven centers in Andhra Pradesh, Gujarat and Kerala, as the first phase of a fisheries development program.

1.8 Reaction in Washington was that the draft project required further preparation, in that it did not contain sufficient support for artisanal fishermen and it was not feasible to appraise, at one time, seven sub-projects in three states. The aim should be to service only one state to start with. A seven man Bank pre-appraisal mission therefore visited India during May 1976 and agreed with GOI that Gujarat be selected as beneficiary for the first marine fisheries project, with the intention that follow-up projects would cover the other coastal states. The mission completed preparation and then proceeded to appraise the project, although in retrospect this was, perhaps a little hasty. It also assisted NABARD to identify an artisanal fisheries sub-project and subsequently appraised it. Concern was expressed about financial and organizational weaknesses in GFCCA, however, GOG assurances were given during negotiations that a rehabilitation program would be implemented.

1.9 Negotiations between GOI and the Bank for the joint IDA credit/IBRD loan, took place between February 7-18, 1977 and the project was approved by the Board on March 31, 1977. The credit/loan agreement was signed on April 22, 1977 and became effective, on schedule on July 19, 1977.

II. IMPLEMENTATION EXPERIENCE

Project Changes after Appraisal

2.1 (i) The credit component for establishing additional ice plant and other shore facilities was dropped during implementation, because privately financed fish processing capacity in the project area expanded rapidly after appraisal and there was no demand for the credit facilities offered by the project.

(ii) The MFV component was scaled down from 270 to 168 units (of which only 137 were completed), because of the participating commercial banks' refusal to continue lending to fishermen for fear of growing arrears, and the failure to include, either within the banking plan or the project, provision for setting up an effective loan recovery system at field level.

(iii) The traditional or artisanal fisheries component was changed when a GOI ban on logging for dug-out canoe production was imposed shortly after appraisal. This measure frustrated the intended supply of 344 traditional dug-

outs but strengthened the production of prototype FRP craft to replace the dug-outs.

(iv) The number of villages assisted was reduced to seven, because it was discovered that one of the original eight was already supported by a different development scheme.

(v) The services of a fisheries resource management specialist and a management adviser, as proposed in the SAR under the technical assistance component, were not used but in their place a team of three experts from a UK consulting firm was engaged to assist in setting up the Fisheries Terminal Organization.

(vi) The main post-appraisal changes, which led to much of the subsequent difficulty and delay, were to the plans for Veraval harbor. These are described in greater detail below, but they involved a change in layout to accommodate larger than expected numbers of vessels, and changes to the breakwater design consequent on the discovery that the pre-appraisal hydrographic and other on-site investigations were inadequate and in some respects, inaccurate.

The Harbor Improvement Component

2.2 The proposals for developing Veraval and Mangrol fishing harbors involved the construction of breakwaters and quays, excavation and dredging and constructing the necessary buildings and other facilities ashore, including the provision of power, fueling points and water supplies. At appraisal it was expected that tendering and appointment of contractors for the civil works would be completed by November 1977, barely 4 months after effectiveness, whereas the contracts were not finally awarded until October 1978 and work commenced in January 1979, about one year late. It was originally expected that Mangrol harbor construction would be completed by December 1980 and Veraval by June 1981. In fact, Mangrol was not finished until early 1985 and Veraval about July 1986.

2.3 Construction of Mangrol harbor was comparatively straightforward, but extensive and unforeseen rock excavation in the harbor basin proved necessary and acute shortages of cement and diesel fuel also combined to hinder the contractor's progress. Consequently the job was not finally completed until early 1985, about 4-1/2 years late. Veraval harbor construction was afflicted with major problems, especially as regards the breakwaters, following additional post-appraisal hydrographic surveys and wave height/period studies. The results of these investigations showed that substantial modification was needed, which increased the scope and volume of work very considerably. The breakwaters had to be heightened, widened and protected against wave action on their seaward sides by much sturdier armoring, involving the use of carefully positioned 10 ton concrete dolosse instead of dumped 5 ton quarried stone pieces. The production of dolosse was affected by cement shortages. Their positioning, which could only be carried out during calm weather periods, required a crane which was not envisaged at appraisal and its acquisition posed many problems and caused considerable delay. There were substantial changes to the harbor layout which were also introduced after the construction contract was awarded and which also

increased the amount of work involved. In addition, three cyclones struck the coast at Veraval during 1981, 1982 and 1983, causing damage to the partly built breakwaters and shore facilities. Further damage was caused by gales during the 1984/85 monsoon and the need for repairs added to delays and total cost.

2.4 The same contractor was employed for both harbors and because of all these changes and other difficulties, he was faced with more work over a longer period and much higher prices for essential commodities than was provided for in the escalation clauses of the contract. The dispute between the contractor and GOG over increased cost could not be resolved and was submitted for arbitration in June 1981. An award was declared in favor of the contractor in September 1982, but the lengthy proceedings really cost much more in terms of lost time than in financial cost and might have been avoided had the escalation clause wording been more carefully vetted at the outset.

Mechanized Fishing Vessels, Canoes and Outboard Motors

2.5 A total of 137 MFVs were financed under the project, instead of 270 as originally intended. This part of the project effectively ended in November 1980 when the participating commercial banks refused to continue any further lending. This was because of escalating arrears consequent on GFCCA's failure to collect repayments when due, from the boat owners and inability therefore, to reimburse the banks. Schedule A of the SAR, which sets out the Project lending terms and conditions, envisaged that most of the vessel sub-loans would be arranged directly between the bank and the fisherman/cooperative acquiring the new boat. However there was a proviso allowing vessels to be purchased under hire-purchase agreements through GFCCA or a registered fisheries cooperative society. In practice it is understood that all the sub-loans were organized as hire-purchase deals through GFCCA, because it was believed that the beneficiaries concerned would sell their catches through GFCCA outlets, thereby simplifying the task of deducting repayments on a regular basis. Unfortunately, the fish processing and marketing sections were GFCCA's weakest functions, and were progressively taken over by private competition during the course of the project, to the detriment of loan recovery. Despite efforts at persuasion, the banks were unwilling to set up their own collection systems at the fishing harbors.

2.6 The project provided for the production of 344 traditional wooden dug-out canoes and also 6 FRP canoes to test their suitability as potential replacements for the dug-out under Gujarat conditions. The project also provided for the import of 1400 outboard motors (OBMs). In view of the GOI ban on using hardwood logs for dug-out canoe production, on the grounds that it was a wasteful use of an increasingly scarce commodity, GFCCA concentrated on the development of FRP craft. Prototypes were built of four different canoe designs for trial and testing by experienced local fishermen. Two of the designs were quickly rejected as unsuitable and a number of modifications were made to the other two, in line with fishermen's suggestions during the trials. Eventually the design which most closely resembled the traditional canoe emerged as the most favored for general production. According to the PCR, this process was unduly protracted and considerably delayed the implementation of this component. Audit disagrees with this view because once the production of conventional dug-outs was halted, the development of a satisfactory alternative craft became a matter of major

importance. Experience shows, however, that undue haste in concluding such a design and trials program can generate serious errors. It is the fishermen rather than the experts who have to decide when the boat is right and in this case it is considered that they did well to reach the stage of an acceptable production design prior to project closing. In fact they did better than that, because by December 1984 about 40 of these canoes had been sold.

2.7 The outboard motors to be provided had to be imported since there was no locally manufactured equivalent, and procurement was therefore made subject to international tendering. The record is not very clear about the preparatory studies for this sub-component but the SAR notes that although only 40% of the 1600 canoes in the project area were motorized, there was high demand as against very limited supplies because of foreign exchange/import license restrictions. When GFCCA imported 200 kerosene powered motors during 1976 from Japan, they sold out within two days. Unfortunately there is no reference to any inquiries as to which makes or types of motor were preferred by the fishermen.

2.8 International tendering and selection of the model/make of OBM was completed by April 1979 but there was a 15 month delay in obtaining the import licenses from GOI. Eventually, 300 units plus spares were imported by GFCCA in April 1981 and a further 128 in September 1982 but GFCCA experienced great difficulty in selling them. The selected motor was made by an internationally famous and entirely reputable manufacturer, but it was not the one which the fishermen wanted. As stated in the PCR (para. 3.16), "fishermen considered their reliability inferior to another competitive make. Consequently, they were willing to pay a premium to acquire the latter. In view of this, the further import of OBMs under the project was discontinued." Audit is at a loss to understand why this decision was taken, rather than the more logical step of placing orders for the kind of OBM which the fishermen did want. There being no indication that there was any easing of supply from other sources, demand presumably still remained at a high level because of the shortage caused by continuing foreign exchange constraints.

Project Area Village Developments

2.9 Eight fishing villages were identified at appraisal but one (Madhwad) was taken under a separate GOI sponsored scheme. The remaining seven villages were each provided with a working shed/fish store for marketing purposes. Access roads were constructed to Mangrol harbor and five of the villages, totalling 17.4 km instead of the SAR target of 33.5 km. Piped water supply systems were installed for four villages out of the SAR provision for five, according to the PCR. However, the GOG Commissioner of Fisheries informed the audit mission that in the meantime the fifth village has also been provided with a water supply. Finally, although the project originally provided for GFCCA to acquire four trucks to supply ice to the villages and transport their catches for marketing through the GFCCA facilities, it was eventually decided that three trucks would suffice.

Fishnet Making Machines

2.10 As a separate sub-item, the project included provision for GFCCA to expand its existing net making plant by the addition of two netting looms. The

two machines were duly purchased from Japan and were installed in GFCCA's factory in Ahmedabad in April 1981. After some initial delay whilst additional locally made and non-project funded, twine machinery was on order, the netting machines have been operating satisfactorily. The PCR noted that the plant was working at only about 30%-40% of capacity in 1986, whereas utilization was nearer 60% at audit. The factory is the principal supplier of nets for both marine and freshwater fisheries in Gujarat and other nearby states.

Test Fishing and Marketing Surveys

2.11 It is clear from SAR, Annex 6(A), that the original intention was for a commercially oriented fishing survey of the pelagic and demersal fish stocks in all the waters off Gujarat and Andhra Pradesh States, from inshore outwards to the 200 m depth contour. The main aim was to assess the technical and economic feasibility of commercial fishing operations in these waters by trawlers and purse seiners. It was not intended that the work should have any more than a minor scientific role and it was supposed that the surveys would be carried out by chartered commercial fishing vessels. There may have been a difference in perception between the Bank and GOI about these aims but no objection was raised when GOI proposed that the survey be carried out by its own agency, the Exploratory Fishing Project, now known as the Fishery Survey of India (FSI), based in Bombay. The main function of FSI is to assess and monitor the fish resources within Indian fishery limits and it is therefore not surprising to see in the report of Supervision No. 4, and subsequently, comments that most of the survey time was spent on data collection for stock assessment/resource monitoring purposes, to the detriment of intended commercial fishing trials. The survey was carried out between January 1979 and September 1981 and apparently without any change in emphasis, despite further representations from the Bank and as noted in the PCR, para. 3.19, therefore failed to achieve its main targets.

2.12 The Indian Institute of Management undertook the marine fish marketing study during the period March 1979 until August 1981 and its report, in 8 volumes covering studies in 84 cities and towns throughout India, was published towards the end of 1981. There do not appear to have been any difficulties in implementing this part of the project. The principal findings were that demand for fish on the domestic market greatly exceeded supply and consequently there was a need to exploit more marine resources including deep-sea fish. There was a risk that further promotion of small MFVs could result in overfishing the shallower inshore grounds. There was a need to regulate fish marketing to limit the effect of trader's monopolies, coupled with needs for investment in up-dated distribution and retail market facilities. The role and performance of cooperatives and corporations in fish marketing needed review, especially in the light of a recommendation that a National Fisheries Board be set up, to regulate and oversee the entire fisheries sector in the country.

Management and Supervision

2.13 Although managerial problems were recorded by nine of the eleven supervision missions, they were in the main rated as minor to moderate, rising to category 3 (major problems) only during Supervision 10 in early 1983. The reason for this reaction is not very clear, except that the original Closing Date

of June 30, 1983 had already had to be extended for 12 months and it was becoming apparent that the work could not be completed by the revised date.

2.14 The general arrangements for project management were initiated as set out in the SAR. At GOI level, a Central Coordination Committee under the chairmanship of the Joint Secretary for Fisheries in the Ministry of Agriculture, was set up in New Delhi to monitor progress of both the Gujarat and Andhra Pradesh projects. At GOG level, a Project Supervision Committee was established under the chairmanship of the Secretary, DPF, with the Commissioner of Fisheries acting in the dual roles of Supervision Committee secretary and overall Project Coordinator. These arrangements worked satisfactorily except for some loss of continuity because of rather frequent senior staff changes, particularly at Secretary and Commissioner level, amongst members of the Indian Administrative Service (IAS).

2.15 Responsibility for supervising harbor construction by contractors was delegated to the Gujarat Maritime Board. The Board assigned a senior staff member as Superintending Engineer, assisted by Executive, Deputy and Junior Engineers to exercise day to day control. The time and cost overruns consequent on essential design changes stemmed primarily from inadequate preparation of the project, and were therefore largely outwith the control of the port engineers who, in the audit's view did a good job under difficult circumstances. It is to their credit that the two fishing harbors were eventually completed in accordance with specifications and to a high standard.

2.16 As provided for at appraisal, Fisheries Terminal Divisions were set up at both port sites, as units of the Gujarat Fisheries Department. Whilst construction was in progress they functioned with skeleton staffs in a monitoring and coordinating role until, with guidance and assistance from the harbor management consultancy team, they were able to recruit and train the necessary additional staff in readiness to take over operational management of the fishing harbors after completion.

2.17 The Government of Gujarat public works and road building agencies were directly responsible for implementing the minor works required under the traditional fisheries component, namely the access roads, village fish marketing sheds and water supplies. No significant problems were experienced, except for the cement shortage which caused some delays, for example to installations of water supplies to some of the villages, vide the 7th Supervision report.

2.18 The sale of fishing vessels was financed by loans from the participating banks to GFCCA on the basis that the fisherman/owner entered into a hire-purchase agreement with GFCCA to repay the vessel cost over a period. It was expected that, as part of the agreement, the vessel's catch would be sold through GFCCA to facilitate deduction of installments from catch sale proceeds, thereby enabling GFCCA to repay the bank loan. Unfortunately, GFCCA proved unequal to the task in the face of more vigorous competition from private fish processing and marketing operations. These entrepreneurs were able to offer cash advances against future catch deliveries, which GFCCA could not match and which resulted in most of the high value, most profitable fish going to the private firms. GFCCA was thus unable to pay the banks and arrears mounted to the stage when they refused to allow any further credit.

2.19 GFCCA's weakness was recognized at appraisal and assurances were obtained during negotiations that a rehabilitation program would be effected. Consequently no institutional strengthening proposals were included under the project. Various measures were implemented, including the recruitment of additional senior, experienced staff, the introduction of an improved accounting system and the closure and disposal of several older unprofitable activities. In the end, and although much improved, GFCCA like so many parastatal type enterprises, lacked the financial resources and the managerial freedom and flexibility to match the private operators and beat them at their own game.

2.20 A total of 11 supervision missions were mounted between June 1977 and October 1983. The composition of the missions was technically strong, especially in terms of fisheries and engineering know-how but lacked any credit management expertise. There was good continuity of staff between missions which greatly assisted the dialogue and rapport between Bank and local staff and facilitated decisions to deal with the many technical difficulties experienced during project implementation. The frequency of supervision visits, at roughly 7 month intervals, was reasonable and as they averaged about 9 days each, they were of adequate duration but audit is inclined to agree with the PCR comment (para. 6.02), that there should have been one more visit between October 1983 and the extended Closing Date of June 30, 1984, given the large residue of unresolved problems.

III. PROJECT OUTCOME

Closing Date and Project Cost

3.1 In December 1982, GOI requested that the project Closing Date be extended from June 30, 1983 to September 30, 1984 because of the harbor construction delays. The Bank eventually agreed to a 12 month extension to June 30, 1984 although the document advising GOI about this decision was not dated until August 2, 1983, about one month after the original Closing Date. During June 1984 GOI requested a further 12 month extension but the Bank refused and remained adamant despite GOI complaints. However the Bank did agree to reimburse eligible expenditure incurred prior to June 30, 1984 in claims submitted until December 31, 1984.

3.2 The final disbursement was in May 1985 by which time the total IDA credit of US\$4 M and US\$12.42 M of the loan amount was disbursed. The remaining undisbursed balance of US\$1.58 M from the loan was cancelled. According to the PCR, the total project cost at completion (actuals plus estimates for finishing work still outstanding) was Rs 325.5 M (US\$34.9 M), which was 95% of the SAR total estimate of Rs 341.7 M (US\$38 M), or 105% after allowing for the cost of the shore facilities component which was not implemented. However, audit was advised by the Fisheries Commissioner that the PCR overestimated outstanding costs and that, as shown in Table 2, the eventual outcome was Rs 300.82 M, or 97% of the appraisal estimate less costs of the deleted shore facilities. In either case, it is clear that expenditure was contained within overall project estimates

only because of the shortfall in number of MFVs, canoes and outboard motors procured, and corresponding reduction in costs of these items, which compensated for the large cost overrun in the harbor's component.

3.3 It is also apparent that the Bank's decision to close the project and cancel the remaining part of the loan, despite repeated GOG/GOI requests for extension, did cause difficulties in that, in order to finish off the work GOG had to utilize funds earmarked for other purposes to compensate for the cancelled finance.

Performance at Completion and Longer Term Impact

3.4 The PCR was based on the findings of a country visit in March 1986, some 21 months after the Closing Date, when Mangrol harbor had been operational for about a year but when several months' work still remained to complete the fishing harbor at Veraval. By the time of the audit mission in May 1990, Veraval harbor had been in use for about four years and Mangrol for five years, so that the longer term effects were more readily apparent.

3.5 Despite the delays, harbor cost overruns and shortfalls on some appraisal targets, the completion mission concluded that the investment in fishing harbors was proving worthwhile, as evidenced by the rapid growth of the fishing fleet. Privately financed fish processing and marketing facilities in the project area were expanding at a very satisfactory rate to deal with the increased catches of better quality fish and shellfish. Audit was able to confirm that this growth was still continuing. As shown in Table 3, fish landings over the 12 year period from 1977/78 to 1988/90 at Veraval increased by almost 200%, at Mangrol by 150% and overall in the project area by 170%, from 73,000 tons to 196,000 tons per annum. The growth in catch quantity resulted from growth in size of the fishing fleet landing into the project area. Table 4 shows that the MFV fleet increased from 685 vessels in 1977 to 1242 in 1988, and there was an even more dramatic increase in the fleet of motorized canoes, by more than 100%, from 740 to 1551 craft over the same period. By the start of the 1988/89 fishing season there were 860 MFVs based at Veraval, which was designed to accommodate 700. Likewise, at Mangrol 207 MFVs crowd the quayside space designed for only 110 boats. More recent figures were not available but are likely to show further increases in numbers.

3.6 In addition to the MFVs, Table 4 also shows that there has been a very large increase in numbers of motorized canoes landing into the two harbors, attracted by the higher prices and improved market demand. Unfortunately, the harbor plans did not include provision for canoe landings so that, at Veraval the canoes land at the commercial quays where an unofficial and unhygienic fish market has established itself, to the annoyance of the commercial port authorities. The PCR (para. 5.03) records that by 1986 GOG was already considering the need to expand the capacity of both harbors and audit can confirm that congestion at the landing and berthing quays is now so severe that action cannot be long delayed to provide additional space. The original plans allowed for the possibility of expansion but it is recommended that they be reviewed so that proper facilities for the canoe fleets can also be included.

3.7 As was also noted in the PCR, the successful development of an FRP canoe at the GFCCA yard in place of the traditional wooden dug-out, evoked considerable interest amongst the artisanal fishing community, such that sales totalled 40 craft by the end of 1984. In the four years since the completion mission, the GFCCA boatyard in Veraval has built and sold 350 of these canoes and has a further 60 on order. In addition, a private yard in Veraval has produced 250 FRP canoes of similar design, and a Government owned yard in Mangrol is building them at the rate of 7 per month and has sold 260 of them to date. A number of these craft were seen in use at the harbors and landing beaches and from comments by fishermen it was clear that they are now fully accepted. Notwithstanding that their cost, at Rs 65,000 fully rigged, is more than fishermen would have expected to pay for the traditional wooden canoe, most of the finance for the 860 canoes already sold appears to have been raised by fishermen from traditionally available sources, e.g. family, traders, etc., rather than from officially sponsored loan schemes. The commercial banks still remain on the sidelines, unwilling to lend to such fishermen because of their inability, in most cases, to provide the kinds of collateral that the banks demand. In contrast to the PCR, para. 3.15, which appeared to express disappointment with the outcome of this part of the project, audit considers it to have been an outstandingly successful component which ensures a continuing supply of artisanal fishing craft following the ban on logging for traditional dug-out production.

3.8 Sales resistance to the unpopular make of outboard motor which resulted from the strict application of international competitive tendering procedures, slowly reduced over time, so that eventually all were sold. However, it took 13 months to sell the first batch of 300 and 14 months for the second batch of 128. Sales were but a fraction of the numbers that could have been procured and sold had attention been given at the outset to the fishermen's wishes. As it was, the project achieved only 30% of the target for this component, whereas it could easily have scored 100% if the necessary pre-implementation ground work had been carried out. The matter could have been rectified if the fourth supervision (July 1979) had reacted more appropriately when fishermen objected to the choice of engine after the successful tender bid was announced, twelve months or more before the first orders were placed. Instead, it was decided to discontinue any further imports after the second batch.

3.9 Concurrently with the commissioning of the new harbors, at Mangrol in 1985 and Veraval in 1986, the Fisheries Terminal Division also became fully operational and responsible for harbor management. FTD staff were assisted in preparing for this task by consultants whose report also included recommendations for a broad range of levies intended to recover harbor operating costs. As noted in PCR, para. 4.10, some aspects of the consultants' report were being implemented and some minor charges levied, notably those payable by traders, whilst the balance of cost recovery proposals were being reviewed by GOG. Audit found that the situation remains largely unchanged. For example, maintenance costs of the two harbors during 1989/90 were Rs 3.15 M whereas revenue from rentals and other charges totalled only Rs 0.41 M. It does seem clear that GOG decisions are urgently needed to enable the harbors to become self financing.

3.10 In other respects, audit found the standards of fishing harbor management to be very impressive. The quayside fish auction halls and handling spaces at both harbors were clean and well organized, with ample ice supplies and frequent washing down all contributing to good quality products and higher prices to fishermen and traders. FTD staff have established good working relationships with FTD harbor users who also participate in management consultative committees. Record keeping and data collection seems to function well and the practice of publicizing both local and export market prices is especially commended. Apart from the question of cost recovery, the main problems seem to be congestion at the landing quays, the need for proper facilities to serve the canoe fleet and an acute shortage of space for fish drying. At present batches can be seen spread out to dry not only in the designated areas but alongside access roads, on the roads themselves and on the breakwaters, etc. This is potentially hazardous as well as unhygienic and therefore should be more strictly controlled, at least in the vicinity of the fishing harbor.

3.11 The component for improving marketing and other infrastructure at fishing villages in the project area, was completed expeditiously and has proved especially beneficial. The audit was able to visit one of the villages concerned and meet fishermen, fishing cooperative and community leaders who described the situation prior to the project and how it has changed. Originally their access was by means of a path to the main road, some 6 km away, which was passable only by bullock cart, bicycle or on foot. All fish had to be dried and head-loaded out or sold at low prices to bullock-cart traders. Now they have an all-weather motorable road, regular bus services, traders who come daily to buy fresh fish at prices which they know are reasonable because of the figures they receive from the FTD.

3.12 The marketing sheds provided at each village serve as office and store for the village fishing cooperative, which purchases bulk supplies of fuel from GFCCA for sale to members, plus fishing gear, engine spares and other requisites. An effort was made at one time, by the coop. to gather all catches for sale to GFCCA, but this was abandoned when members decided it was better to negotiate individually with traders, who mostly act as agents for processors in Veraval. The village fishing fleet totals 160 canoes, all are now motorized and the total includes 20 FRP craft.

3.13 The project provided a good, piped water supply in place of the old semi-brackish well, to serve the village and the community now also benefits from a health center and primary and intermediate schools. All of these benefits are affordable now because of the increased incomes and alluence, in real terms, which stem very largely from the project. However, there is a down-side in that the village access road has also provided access to a nearby green field site on which a soda-ash factory has been built. The fishermen are worried about the effect of sediment from factory effluent which is discharged into the sea, on adjacent fishing grounds, and at times the village suffers from wind-borne acrid dust from the factory.

3.14 Economic rates of return were re-estimated at completion for each of the two harbors, for a typical MFV and for a motorized canoe and finally for the project as a whole. The ERR for Veraval harbor was re-estimated at 13% (SAR estimate - 18%), and Mangrol at 20% (SAR - 16%). The SAR estimate of 48% for an

MFV increased to 53% at completion, mainly because of higher fish prices, and for canoes likewise the ERR estimate increased from 31% to 99%. The traditional fishery component was assessed at appraisal at 53% and for some reason was not included in the PCR re-estimation but for the project as a whole there was a reduction in the SAR estimate of 24% to a re-estimate of only 16% in the PCR. The audit mission lacked time or data for further ERR recalculations but views the figures above with some skepticism. The impression that is given, that Mangrol was more successful but Veraval less so than was expected at appraisal, is not wholly in accord with the pattern of events, given that Veraval suffered to a far greater extent from pre-implementation inadequacy. Under the conditions obtaining in Gujarat, a canoe is undoubtedly a good investment, but the jump in ERR from 31% to 99% almost suggests that a fisherman could become a millionaire overnight, which is certainly not correct. Finally, the reduction in estimated ERR for the overall project, from 24% to 16% conveys the idea that the project turned out disappointingly compared with appraisal expectations. This is quite definitely not the case; both harbors are bursting at the seams, productivity is at record levels, processing and marketing capacity has kept pace, fishermen have directly benefitted, as has the wider community from the growth in affluence, and significant institutional strengthening has resulted from the project which, in the audit's opinion has been much more successful than has generally been believed hitherto.

3.15 It is apparent that expansion cannot continue indefinitely into the future at the recent rates. The need to safeguard all the achievements to date requires that particular care must be exercised to ensure that safe sustainable yields from the fish stocks are not exceeded. As pointed out by one of the appraisal team members, there was a downward trend in the annual average catch per boat prior to this project and Table 5(a) indicates that this trend is continuing. However, as was also pointed out to the audit mission by Fishery Survey of India scientists, total catch is still increasing year by year concurrently with the growth in fleet size so that there is no evidence of any immediate risk, especially to the shrimp stocks. It is interesting to note, from Table 4 that there appears to be a revival of gill-netting popularity in the MFV fleet, after several years of decline and it is strongly recommended that any such moves to diversify fishing effort be actively supported, in the interests of widening the range of exploitable fish species.

B. ANDHRA PRADESH FISHERIES PROJECT

I. BACKGROUND

Context and Project Objectives

3.16 The fisheries project in Andhra Pradesh was the second in what was originally intended as a larger program of World Bank funded development of marine fisheries in India's coastal states and aimed at increasing investment, employment and production of fish, and to more fully utilize India's sea fish resources for domestic consumption and increased export earnings.

3.17 The project's specific objectives were to relieve congestion and improve the facilities for handling and marketing fish at two of the State's main fishing ports and by constructing a new fishing harbor further south, to increase marine fisheries production and improve access to the less heavily exploited southern fishing grounds. Secondly, to provide credit for the acquisition of fishing vessels by individuals, companies and cooperatives, and for seafood processing plants for the state-owned Andhra Pradesh Fisheries Corporation (APFC) and thirdly, to improve the productivity of small fishermen by constructing access roads to a large number of artisanal fishing villages scattered along the Andhra Pradesh State coast.

Design

3.18 The design of the project, as approved by the Board in May 1978, included the following components:

- (a) development of fishing harbors to relieve congestion, through expansion of the fishing harbor at Visakhapatnam; construction of new harbor facilities of greater capacity at Kakinada; and construction of a completely new fishing harbor at Nizampatnam;
- (b) construction of a water supply system for the new harbor and for Nizampatnam village;
- (c) construction of 157 km and improvement of a further 58 km of coastal village access roads;
- (d) provision of credit for 360 MFVs and 60 non-mechanized sailing craft;
- (e) provision of credit for the establishment of APFC owned seafood processing plant at Visakhapatnam and at Nizampatnam;
- (f) technical assistance for a specialist in estuarial river training works and a naval architect as consultants; for an overseas study tour for 10 people involved in project management and for funding the construction of two experimental 23 m wooden shrimp trawlers.

Finance Plan and Organization

3.19 The project, as submitted for Board approval, was intended to be implemented over a five year period and was estimated to cost Rs 313.6 M (US\$36.5 M). An IDA credit of US\$17.5 M was granted towards this cost. Allocation of the total estimate was approximately 53% to the harbor development component, 25% for fishing vessel credit, 13% to the village access road construction component and rather less than 4% each to APFC fish processing credit and to technical assistance.

3.20 With the exception of the Visakhapatnam harbor works which were managed by the Visakhapatnam Port Trust, an agency responsible directly to GOI, the remainder of the project was handled by GOAP agencies under the direction of a Project Coordinating Committee which was established at state level. The

Fisheries Department (DOF) was the lead agency responsible for project monitoring and for setting up Fisheries Terminal Organizations (FTOs) to manage the fishing harbors upon completion. Construction work at Kakinada and Nizampatnam was supervised by the Directorate of State Ports, whilst the village road building program and the water supply for Nizampatnam was managed partly by the A. P. Panchayat Raj Department and partly by the A. P. Roads and Buildings Department.

3.21 The Andhra Pradesh Fisheries Corporation boatyard built most of the MFVs and the two experimental wooden trawlers. Refinance for credit operations, based on banking plans provided by NABARD which were acceptable to IDA, was extended by NABARD to participating commercial banks, originally four in number but later increased to eight. These banks were each responsible for managing their own loan portfolios, including arrangements for loan recovery but were assisted in identifying suitable borrowers by the DOF and APFC.

Pre-Implementation Processing

3.22 The project originated through the same identification process as gave rise to the slightly earlier Gujarat Fisheries Project. Indeed, the CP Identification and Preparation Mission which visited India in July/August 1975, included AP, Gujarat and Kerala in the first phase of a fisheries development program which aimed to increase fishing harbor capacity, expand and modernize the fishing fleet and develop onshore infrastructure for fish processing and marketing, etc. However, after further consideration it was decided that although the CP study had carried out a more detailed identification, preparation was still incomplete.

3.23 Further preparation of the harbor components was undertaken by the UNDP/SIDA Pre-Investment Survey of Fishing Harbors Project based in Bangalore and by the AP Directorate of State Ports (DSP). In the meantime final preparation and appraisal of the Gujarat project proceeded independently, enabling it to be started in July 1977. GOI submitted final proposals to the Bank in May 1977, for developments to proceed concurrently in Kerala and Andhra Pradesh, but subsequently accorded higher priority to AP. At this stage it should be noted that the proposals for Kakinada harbor were limited to improvement of the existing overcrowded facilities.

3.24 A seven-man World Bank appraisal mission then visited India for three weeks during September/October 1977, in the course of which the scale of the project was greatly enlarged. The plans for improving the existing harbor at Kakinada were found to offer too little scope for increasing its capacity, whereas preliminary studies by DSP for an alternative nearby site, were considered adequate to establish the general engineering feasibility of developing a new fish harbor to serve the rapidly growing Kakinada fleet. Consequently, the Kakinada new harbor development was included as a component of the project. The coastal village access roads component was also included and the scale of the MFV component was increased. A credit component for thirty 23 m shrimp trawlers was also included but was subsequently deleted at GOI's request.

3.25 According to SAR para. 7.10, the only risks perceived were the possibility of over-exploiting the near shore shrimp stocks and constraints to

development if fishing vessels were to have difficulty in negotiating the shallow bar at the entrance to Nizampatnam harbor especially in bad weather. To safeguard the marine resources DOF would institute a catch monitoring system and it was anticipated that the project harbor and river training consultants would identify means to minimize the harbor entrance problem. Elsewhere, in SAR para. 3.04 it is acknowledged that although basic engineering data had been developed to establish the technical feasibility of relocating Kakinada fishing harbor, further investigations were still required to determine the seabed soil conditions at the breakwater and jetty sites more precisely, and to establish the optimum breakwater length, size and quantity of armoring and filter layer requirements, etc. Finally, concern was expressed, vide SAR para. 5.07 about the need for financial, organizational and managerial strengthening of APFC to enable it to fulfill its role in the project. However, assurances were given by GOAP during negotiations that the necessary additional capital injection and reorganization would be implemented.

3.26 Negotiations between GOI and IDA took place during April 12-24, 1978, following which the Bank's Board of Directors approved the proposed credit of US\$17.5 M on May 30, 1978. The credit agreement was signed on June 19, 1978 and the credit became effective on October 31, 1978 after the banking plan had been submitted to and approved by IDA.

II. IMPLEMENTATION EXPERIENCE

Project Changes after Appraisal

3.27 (i) The component for setting up APFC seafood processing plants at Visakhapatnam and Nizampatnam, was dropped in late 1981 because existing capacity, mainly privately owned, was already adequate and, at least at Visakhapatnam, was continuing to increase. The effect of the growth of private sector competition was to cause continuous low capacity utilization of APFC's existing processing units at the ports.

(ii) The harbor component was subjected to various changes in the course of implementation. Firstly, there were minor alterations to the Visakhapatnam plan, involving in particular, an increase in the length of berthing quay. Secondly, in the case Kakinada harbor, more substantial design changes became necessary as a consequence of the additional site investigations and design studies already referred to in para. 54 above. The main changes were to the breakwater cross-section design, to the pile lengths needed for the landing jetties, to the provision of a concrete wave wall, sand drains to stabilize the very soft seabed soil below the breakwater and to the quantities of rock in-fill needed to establish stable and permanent structures at the requisite height above high-water level. As might be expected, these changes had a major impact on construction time and cost.

(iii) Re-alignment of the village access roads enabled the distance involved to be reduced from 215 km to 162 km, without significant reduction in the numbers of villages and people benefitting. Responsibility for implementing

the roads component was transferred from the Panchayati Raj Department to the Roads and Building Department, but responsibility for routine maintenance after construction remained with PRD.

Implementation of the Harbor Component

3.28 Visakhapatnam Harbor. The proposals for improvement aimed at expanding the existing harbor by providing an extra 1,115 m (later increased to 1,270 m) of landing quay and berthing jetties; expanded repair jetty and slipway facilities; onshore buildings including auction hall expansion, fishing gear stores and toilets; construction of roads, drains and culverts, additional mains water distribution, land acquisition and dredging the repair jetty and slipway area. Implementation was supervised by staff of the Visakhapatnam Port Trust and posed few problems. Construction commenced in mid-1980 and the new facilities were officially opened in February 1982 having cost Rs 69.15 M, equivalent to US\$7.44 M, or about 80% of the Appraisal estimated cost. In the meantime the fleet of MFVs and larger trawlers has continued to grow and at the time of the audit visit in May 1990 it was noted that a further phase of construction to increase berthing space, was already in progress and due for completion in 1992.

3.29 Nizampatnam Harbor. The new harbor was created from scratch on a green-field site at the confluence of Nizampatnam Creek with the Tungabhadra drainage canal, about 1 km inland from the sea and 6 km from Nizampatnam village. The development was intended to serve as a permanent base for upwards of 85 MFVs and 175 sailing vessels, whereas in the past only about 115 sailing craft were able to use the creek all year round, and 25 MFVs only seasonally. The civil works comprised excavating and dredging a 215 m by 30 m harbor basin, constructing a 190 m sheet piled quay, slipway, channel bank revetments, onshore buildings including fish auction hall, stores, offices, approach road, fuel supply and mains services, etc.

3.30 Construction was supervised by DSP and commenced in early 1979 as a series of small contracts which were carried out without undue difficulty except that they took about three years longer to complete than expected. With the exception of work on the harbor mouth training walls, the other facilities were completed by March 1986, since when the harbor has been in partial use by the fishing fleet pending final completion and formal inauguration. Audit was informed that all the work should be finished by December 1990, but that was before the recent cyclone which caused severe damage to buildings, revetments and to the incomplete training walls. It seems inevitable that rectifying this damage will cause additional costs and further delays but the current revised estimate by DSP, excluding training wall and cyclone damage repair costs is Rs 20.07 M, of which a total of Rs 14.53 M was spent by the end of March 1990.

3.31 The need for harbor mouth improvements such as training walls, to increase the depth of water was considered at appraisal but nothing was included in the project except provision for a consultant to advise on the matter. His report of September 1983 recommended the construction of two 300 m walls at a revised estimated cost of Rs 7.8 M. This work was sanctioned by GOAP and construction started in May 1985 but completion has been delayed because the first contractor failed and it took some time to find a successor to finish the

job. As noted above the work was nearing final completion prior to the May 1990 cyclone. In the meantime the MFV fleet has grown steadily and currently numbers more than 200 vessels operating regularly from Nizampatnam, in addition to an uncertain number of sail driven and motorized traditional craft.

3.32 Kakinada Harbor. The new harbor facilities at Kakinada which replaces the old and very congested fishing port in the center of Kakinada city, some 8 km distant, were formally inaugurated in February 1988, about six years later than was intended when the project started. The facilities provided include an 880 m long breakwater with a 200 m right angled spur at the seaward end, two landing jetties with auction halls, one for the 23 m shrimp trawlers and the other for the smaller MFVs, each providing 340 m of quay length, together with two 185 m berthing jetties and a 150 m outfitting jetty for the MFVs, offices, roads and services including power, water and fuel points, etc. At the landward end of the breakwater there are sites allocated for vessel repair and for ice-making and fish processing plants, etc. Construction was by two contractors under DSP supervision, one for the breakwater and the other for the landing structures. The contracts were awarded in October 1980 and December 1980 respectively.

3.33 The decision, at appraisal to opt for this new site rather than extend the life of the old harbor, was taken in the knowledge that only limited site data was available and that additional site investigations had to be performed prior to awarding the construction contracts. 25 new borings were carried out during 1978-79 and approval of contract awards was postponed until the Central Water and Power Research Station (CWPRS) at Pune could check the breakwater design in the light of analysis of all the bore samples. It is apparent that the cost estimates and tender advertisements were based on the original specifications as also were the tender bids. However, the CWPRS findings resulted in a change to the breakwater cross-sectional design involving more material because of the 8 m depth of unstable soft silty clay below seabed level. Despite the change, the lowest tenderer agreed to carry out the work to the revised specifications but in other respects abiding by the terms of the tender. CWPRS also recommended stabilizing the seabed below the breakwater by sand drains and adding additional rock armoring to further reduce wave impact on the structure. However, as these items were additional they were entrusted to the contractor under supplementary lump sum contracts.

3.34 Rock for the harbor construction had to be quarried from a site some 40 km away because of the lack of suitable material any nearer. It was then found that the rock sank into the seabed because of its softness, to such an extent that sinkage losses of up to 50% were experienced compared with designed quantities. These additional costs were not covered by the contract and the agreed escalation formula also failed to provide for a large rise in prices for fuel and truck tires. Increasing cash flow problems and failure to reach agreement by other means, caused the contractor to file for arbitration in October 1982. An award in his favor was given in February 1983 but this was contested by GOAP in the district court which set aside the award in August 1985. In the meantime work was at a standstill and the contractor appealed to the High Court in November 1985, which case is still in progress. However, pending a final ruling a provisional basis for reimbursing costs was agreed allowing a resumption of work and its completion in February 1988.

3.35 The second contract for landing and berthing facilities, also ran into difficulties partly on account of the nature of the seabed. Piling tests carried out after the contract award showed the need for an increase in pile length from 17.5 m to 19.8 m, thereby increasing the quantities of steel and concrete required. The works were hampered by slow progress in breakwater construction and were further delayed when cyclones damaged and sank the contractor's floating pile-drivers. The contractor has also filed for arbitration, claiming an amount of Rs 2.05 Crores on the grounds of prolonged escalation period, changes in scope of work and for other losses. These proceedings are still pending but the work under contract was completed during March 1987.

3.36 The latest revised estimate by DSP for the cost of Kakinada fishing harbor development, including provision for arbitration awards, is Rs 111.48 M, an increase of about 45% on the appraisal estimate of Rs 76.70 M. The cyclone of May 1990 caused severe flooding and structural damage in many parts of the district, but the new harbor escaped relatively unscathed and minor damage to the roof of one of the auction halls was soon repaired. The facilities are designed to accommodate 410 MFVs and up to 15 large shrimp trawlers. It appears that although some trawlers were laid up at the new trawler berth during the close season, so far none of them have landed catches into Kakinada. It also appears that about 400 MFVs occasionally operate from the port but only 100 do so on a permanent basis, so that Kakinada does still have some spare capacity.

Nizampatnam Water Supply Scheme

3.37 Provision of a piped water supply for Nizampatnam village and the new fishing harbor was included as a separate project component. The scheme was revised to include additional pumping and storage capacity, in order to also supply Gokarnattam village and a nearby ex-servicemen's housing colony. The work was undertaken by the Panchayati Raj Department and was completed in late 1985, about 3 years later than the appraisal target and at a cost of Rs 1.55 M in contrast to the appraisal estimate of Rs 0.58 M for the original, smaller scheme. Audit was pleased to note that this water supply survived the cyclone relatively unaffected.

Coastal Village Access Roads

3.38 The project originally included provision for the improvement of 58 km of existing roads and the construction of 157 km of new roads, to link up about 100 coastal fishing villages in Guntur, East Godavari and Visakhapatnam Districts. Detailed engineering and alignment surveys were not undertaken until after appraisal, and resulted in a reduction of the total distance involved to 162 km without adverse effect on the numbers of people or communities served. Construction was initially handled by the Panchayati Raj Department but responsibility was subsequently transferred to the P.W.D. Roads and Buildings Department. The work included seven major bridges plus numerous minor crossings and culverts and heavy revetment works in several vulnerable places. Land acquisition problems hindered progress at times, but as noted in the PCR, by early 1986 the roads were virtually complete except for 6.7 km still in dispute.

Mechanized Fishing Vessels (MFVs)

3.39 The project set out to produce 300 x 10 m MFVs, 60 x 9 m MFVs and 60 x 12 m non-mechanized craft, the intention being that they would be financed and sold on credit to fishermen, rural entrepreneurs, cooperatives and business companies, by participating commercial banks on the basis of the banking plan from NABARD which was seen and approved by IDA. In the event a total of only 137 x 10 m MFVs were financed under the project. Of these, 36 were financed through the Andhra Pradesh State Cooperative Bank (APSCB), on terms where the borrower had to contribute only 5% of the cost, a GOAP loan covered 15% and the APSCB loan covered the balance. The other 101 vessels were financed by the State Bank of India (22), the Andhra Bank (20), the Bank of Baroda (34), the Bank of India (15) and the Indian Bank (10). Two further banks were to have been involved but subsequently withdrew. The terms of all these loans were that borrowers contributed 15% against an 85% bank loan and each bank was responsible for organizing its own system for collecting repayment installments.

3.40 It transpired that GOAP was already providing similar non-mechanized craft on highly subsidized terms under various cyclone relief schemes and there was, in consequence no demand for such vessels under this project. The shortfall in numbers of MFVs financed arose because of the reluctance of the participating banks to promote the credit program for fishing vessels consequent on their earlier experience of poor recoveries from such loans. The 4th supervision mission (July 1980), reported that financial and administrative problems were affecting the credit program, and the 6th supervision report (February 1982) noted that the banks had refused to process any further loans because of mounting arrears. The mission stressed the need for urgent action by NABARD, GOAP and the banks to set up more effective arrangements for credit recovery. In spite of numerous meetings there were few if any results and the MFV fleet expansion component had effectively ground to a premature end. Audit considers that the discussions and action referred to above, should have been held before any lending commenced, with guidance from IDA to ensure that appropriate measures would be taken from the outset to facilitate sub-loan repayment. As it was neither the SAR nor the NABARD banking plan included any reference to the nature of fishing and the special arrangements needed to avoid arrears. The participating banks did not appear to have learned any constructive lessons from their earlier experiences, and by the time awareness dawned it was already too late.

Study Tour

3.41 As proposed, a 30 day tour of six south-east Asian countries was organized for 4 officers of the Fisheries Department and 6 senior APFC staff members. They reviewed boat building, fish processing and marketing activities aimed at benefitting project implementation.

Experimental 23 m Wooden Trawlers

3.42 The inclusion of this component was aimed at developing a locally built alternative design for the shrimp trawler fleet, in place of the imported steel-hulled vessels. Recruitment of the U.S. based consultant naval architect was delayed with the consequence that the keels for the two trawlers were not

laid until mid-1984. The credit was closed in March 1985, over 18 months before the vessels could be launched, and this effectively terminated the consultant's services because of an arrangement whereby his fees were paid directly by IDA from project funds held in Washington. The effect of this premature termination was that his advice was not available on site at critical stages during construction, fitting out, launching and trials, as had been intended, and queries had to be dealt with by protracted correspondence, adding further to the delays. Final acceptance trials eventually took place in early 1990 and the audit mission was able to inspect the two trawlers shortly before they entered full service. In consequence, even at this late stage it is not possible to judge the performance of these locally built craft against that of the imported shrimp trawlers.

Management and Supervision

3.43 The project management structure was set up during 1978 and broadly along the lines envisaged at appraisal. The Commissioner of Fisheries was project coordinator, reporting to the Project Coordinating Committee chaired by the GOAP Secretary for Forests and Rural Development. In addition, three District Sub-committees were established in the three project districts under the chairmanship of the District Collector, to facilitate inter-departmental coordination at the district level. At GOI level, progress was monitored by the Central Coordination Committee set up under the earlier Gujarat Fisheries Project. The system worked well enough although audit agrees with a view expressed in PCR para. 4.01, that many of the delays could have been reduced, if not averted, had there been better anticipation of problems, e.g. on recruitment, land acquisition, cost escalation clauses, etc. It seems possible that this inadequacy in forward planning could have resulted in part, from a loss of continuity and impetus consequent on frequent changes of key personnel. As noted in supervision records, between 1978 and 1982 there were two Secretaries of Forests and Rural Development, three Commissioners of Fisheries and at least three Managing Directors for APFC.

3.44 The Department of Fisheries (DOF) had the lead role in project management, for which purpose, according to SAR para. 5.04, it was to establish a Monitoring and Evaluation Unit reporting to the Commissioner of Fisheries, to monitor and report on project problems and progress. In addition, DOF was to set up a Fisheries Terminal Organization for each of the three harbor sites, to supervise project execution during construction and thereafter to administer the fisheries facilities when completed. Finally, a Catch Monitoring Unit was to be established to collect and analyze data for each major category of vessel, on catch rates per unit of effort and catch composition, etc., in order to monitor the impact of increasing fishing effort on the fish and shellfish stocks in the sea. It is clear that it was intended that each should function separately with distinct terms of reference.

3.45 Fisheries Terminal Organizations (FTOs) were established by late 1978, but as reported in PCR, para. 4.14, their intended role was limited because even by 1986, Kakinada and Nizampatnam harbors were not operational and the fish auction halls in Visakhapatnam were not used much. In these circumstances, catch monitoring was instituted as an FTO function rather than organized separately. Much data has been collected on fleet size, fish landings, prices, catch value

per boat/day, etc., but on a port by port basis only. Other than to a limited extent at DOF head office in Hyderabad, there does not appear to be any centralized system for collating all the data to total catch, effort and stock size. There are significant differences in the type of data and manner of collection and presentation as between the ports and a need therefore for improved coordination and standardization of information.

3.46 Following the inauguration of Kakinada fishing harbor in 1988, the FTO there has expanded its activities. In addition to data collection, which still continues, FTO staff are responsible for allocating berths for fishing vessels, levying user charges such as berthing and wharfage dues, and water charges, and controlling the auctioning of fish after landing, along lines already established at Visakhapatnam, and for the general maintenance and cleanliness of the jetties and harbor area. The Nizampatnam FTO has not yet taken over responsibility for harbor management, pending formal inauguration once the training wall work and cyclone repairs are completed. Whilst approving of what has already been achieved, audit considers that the FTOs could be made much more effective and that the technical assistance consultancy on fishing harbor organization and management, which was provided for the Gujarat project, could have also been extended to the Andhra Pradesh project with very considerable benefit at relatively little additional cost. It does not appear that a project Monitoring and Evaluation Unit, as such, was ever established but rather that the M&E function was performed as an additional task by DOF staff also engaged on other duties. There were no base-line studies of the fishing communities at the three harbors or of the coastal artisanal fishing villages. In consequence project evaluation has to rely to a large extent on anecdotal information.

3.47 As a result of cancellation of the new processing plant for APFC, the Corporation's involvement in project implementation reduced to becoming simply that of builder and supplier of fishing vessels financed under the credit scheme, from APFC's Kakinada Boat Building Yard. The record indicates that APFC's performance in this regard was generally satisfactory and that the shortfall in numbers of vessels financed in no way reflected on APFC but on the reluctance of the participating commercial banks to continue lending for this purpose. With regard to the two 23 m trawlers, however, APFC management could have acted more positively to reduce some of the causes of delay.

3.48 IDA fielded nine supervision missions between September 1978 and October 1983, at roughly 7 month intervals and averaging about 9 days each. There was good continuity of staff between missions and strong technical composition in terms of fisheries and engineering expertise. However, none of the missions included any specialist support for fisheries credit management, the area in which the project was least effective, but it is acknowledged that any such input would have had to be at an early stage to have had any impact. Even though the Closing Date was not officially extended, it was agreed that project accounts would remain open for a further 6 months until March 1985, i.e. some 17 months later than the final supervision mission. Audit therefore agrees with the comment in PCR para. 6.02, that there should have been further supervision of the project beyond October 1983.

III. PROJECT OUTCOME

Closing Date and Project Cost

3.49 Following the final supervision visit in October 1983, GOI requested that the project Closing Date be extended by 18 months from September 1984 to March 1986, because of the delays in constructing two of the harbors and the experimental trawlers. The Bank refused to allow any extension of project duration, but did agree to hold the accounts open for 6 months so that eligible expenditure incurred prior to September 30, 1984 could be reimbursed if claimed up to March 31, 1985.

3.50 The final disbursement was made in June 1985, bringing actual disbursement against the credit to US\$9.98 M and the balance of US\$7.52 M (43% of the credit) was cancelled. The PCR shows total project cost at completion, i.e. actuals plus estimates for work still incomplete, as Rs 251.9 M (US\$25.7 M), which was 80% of the SAR total estimate of Rs 313.6 M (US\$36.5 M). Audit found that costs have increased even further in the period since the completion mission's visit in March 1986, and that actual expenditure plus the amounts still required to finish the training walls at Nizampatnam, a short distance of access road and to settle contract arbitration awards, now totals Rs 307.4 M.

3.51 It is apparent that expenditure has been kept within the overall appraisal estimate only because the unavoidable additional cost of the Kakinada breakwater and Nizampatnam harbor entrance works was compensated for by savings from cancellation of the processing plant element and the reduction in outlay on fishing vessel credit. It is also clear that the Bank's refusal to extend the Closing Date despite GOAP/GOI requests for an additional 18 months, caused even more delay and difficulty in completing the work, because GOAP had to find savings from funds intended for other developments, equivalent to the cancelled amount of US\$7.52 M, in order to make good the shortfall.

Performance at Completion and Longer Term Impact

3.52 The PCR findings were the outcome of a completion mission to Andhra Pradesh in March 1986, nearly 18 months therefore, after the official project Closing Date. The expanded facilities at Visakhapatnam fishing harbor had been operational by then for about 4 years and Nizampatnam appeared to be on the verge of completion, but a considerable amount of work still remained to be done at Kakinada. By the time of the audit mission in May 1990, Kakinada was into its second operational year but Nizampatnam was still not quite ready.

3.53 As in the case of Gujarat, it was concluded at completion that development of the Andhra Pradesh harbors, despite the delays, was meeting the growing needs of the Indian east coast fishing industry for additional landing and berthing facilities to serve the expanding fleet, and that the growth of privately financed fish processing and marketing capacity was obviating the need for any increase in public sector/parastatal involvement. The coastal village

access road component was seen as making a significant difference to the lives of the populations of these previously isolated villages.

3.54 On the other hand, the achievement by completion, of targets set at appraisal for disbursing credit to finance fishing vessels was poor and participating banks had proved unable to develop an effective mechanism for recovering loans already granted and therefore stopped making further advances. Delays in consultant recruitment was seen as the main cause of delayed implementation of the experimental trawler component, and the delay in completing the report on training walls at Nizampatnam meant that the proposed investment could not be considered for inclusion within the project. The combination of these factors resulted in 43% of the IDA credit remaining undisbursed at completion and therefore having to be cancelled.

3.55 Audit experienced some difficulty with the fishing fleet statistics (see Table 9) because of difference in the systems for data collection and presentation at the fishing harbors and because of the very large number of peripatetic vessels which migrate seasonally to and from neighboring states. Nevertheless, audit was able to confirm that the fleets of MFVs and larger trawlers have continued to expand, to the extent that, at Visakhapatnam by the time the project financed facilities were ready, the numbers of trawlers already exceeded capacity and thus necessitated an additional phase of quay construction. The MFV fleet now using Nizampatnam Creek is also already larger than the new harbor is designed to accommodate. Figures for the registration of newly built MFVs at Kakinada averaged 78 per year between 1979 and 1985 (PCR para. 5.04), whilst a further 305 new MFVs were registered during the four years 1986 to 1989, confirming that fleet growth was continuing at about the same rate as before.

3.56 A consequence of this growth is that the harbors could again become seriously congested. However, the extra berths at Visakhapatnam now under construction, will relieve the problem there. Kakinada new harbor appears to have spare capacity, at least for the time being, but the position at Nizampatnam seems likely to present problems even after it becomes fully operational. In anticipation of this situation DOF has proposed two further harbor developments for the earliest possible implementation, at Machilipatnam which is a small commercial lighterage port in Krishna District, and at Krishnapatnam in Nellore District. Audit believes that these proposals deserve very careful consideration for future financing.

3.57 As already noted, the original intention to provide credit to APFC to establish additional seafood processing plant at Visakhapatnam and Nizampatnam was deferred and later dropped altogether because private investment in such plant, combined with APFC's existing facilities provided sufficient capacity. At completion it was noted, vide PCR para. 3.02, that privately owned freezing and processing plant had expanded to a stage where there was risk of overcapacity and that APFC's processing units at Visakhapatnam were suffering from continuous low utilization. Audit learned that the position, four years on was much the same as regards shrimp processing, and that APFC was leasing part of its plant at Visakhapatnam and Kakinada to private operators, thereby reducing its direct involvement in this highly competitive market. However, it was also pointed out that the predominant interest hitherto has been in catching and processing shrimp, mostly for export, and that all the plants were designed for that

purpose. Industry representatives from Visakhapatnam stated that because of declining catch rates for shrimp there was now greater interest in finfish for inland consumption but this would require blast-freezing facilities and additional cold storage at the port, with intermediate depots at inland centers such as Raipur and Nagpur. Although this was seen as a matter for private investment, some Government assistance might be needed.

3.58 The coastal village access roads development component was very largely completed before project closure, except for about 6 km held up by land acquisition problems. At completion it was estimated that 98 villages in Guntur, East Godavari and Visakhapatnam Districts, with a combined population of 91,000 people, were benefitting from this development (PCR para. 5.10). There was no base-line survey or subsequent monitoring studies of these communities so it is not possible to quantify the project's impact, but as stated in the PCR it was obvious that the new roads were having a beneficial effect on living conditions. Audit was able to confirm that these benefits were proving durable, in that the villages now have scheduled bus services, fish traders visit on a daily basis to buy fresh fish whereas in the past it had to be dried, fishermen's earnings are thereby enhanced, encouraging increased fishing effort, and the growing affluence is reflected in village improvements such as schools, health centers and "pucca" houses in place of the traditional thatched and mud walled dwellings.

3.59 Unfortunately, some of these roads were breached and bridges badly damaged by floods consequent on the May 1990 cyclone. Many of the villages were flooded, numerous houses collapsed and in some cases most, if not all their canoe-type traditional fishing boats and nets were swept away, lost or smashed by the force of the storm. Happily, there were very few human casualties because the roads enabled the authorities to evacuate most of the coastal population and those who remained were able to take cover in a number of cyclone shelters built by GOAP during recent years. It is to be hoped that relief and mitigation measures currently in hand, including assistance from the World Bank, will quickly ease the current distress and minimize the risk of damage from future storms.

3.60 As noted in para. 3.55 above, the mechanized fishing fleet steadily grew in size, both during the project and since completion, apparently irrespective of the initial availability and subsequent cessation of the credit scheme for new MFVs offered by the project. It does not appear as if the availability of finance for vessel construction has been a constraint and it is thus legitimate to question whether there was any need for this component from the outset. However, the record shows that there was no shortage of applicants, whose bonafides were verified by the District Subcommittees in the course of selecting prospective beneficiaries under the GOAP loan scheme and in addition to the 137 vessel loans which were approved and implemented, there were many other applications left outstanding when the banks decided to discontinue any further lending.

3.61 The credit scheme as a whole was supervised by NABARD on the basis of a banking plan which was prepared by NABARD in consultation with the participating banks and which, as a condition of effectiveness, was also submitted to and approved by IDA (SAR, para. 8.02[ii]). Given the opportunities

for consultation and for IDA to review the plan in the light of its own experience of fisheries lending in other parts of the world before giving its approval, it seems incredible that the scheme could have been launched with participating banks generally lacking in fisheries sector experience and totally lacking any appropriately designed loan recovery machinery. Experience with the Gujarat and Andhra Pradesh projects indicated that NABARD was equally ill-prepared, in contrast to the statement in SAR, para. 5.09, that NABARD "...is operating satisfactorily in 30 IDA-assisted projects in the agricultural sector." There is no indication whether any of these projects had anything to do with marine fisheries.

3.62 The position at completion was that Rs 17.02 M was lent in respect of 137 vessels (SAR target 360), the average loan amount being Rs 124,000. Of the total lending amount, the claim for refinance from NABARD was Rs 13.66 M. Two of the eight participating commercial banks failed to make any loans, three had failed to recover any of the amounts due, whilst recoveries by the other three banks were no more than 10-22%. Studies by the banks to review the poor recovery rate suggested that major causes were wilful default, declining profitability of the vessels and the absence of centralized marketing arrangements through which the loans could be repaid. Most of the banks agreed that their standard loan repayment system was not particularly suitable for fishery loans, but they were unwilling to change and could not even agree to set up jointly financed recovery units at the fishing harbors where the catches were sold.

3.63 Audit considers that the expansion in numbers of fishing vessels which continued throughout this period contradicts suggestions that vessels were unprofitable and therefore their owners were unable to repay the loans. There may be a few wilful defaulters but hardly so many, and the demand for a marketing organization to be responsible for deducting loan repayments is, in audit's view a case of the banks trying to shuffle their job onto someone else. Audit was unable to obtain an up-to-date statement of arrears. All of the loans should have been fully repaid by now but as the banks have not changed their systems it seems probable that many loans will still be outstanding. Senior managers at two of the banks concerned (State Bank of India and the Andhra Bank) said that they had a few current loans for larger shrimp trawlers owned by companies or reputable individual businessmen, but demand for bank loans was small because there were other sources of finance at subsidized rates available in the shipbuilding sector.

3.64 The increase in fleet size over recent years has inevitably resulted in heavier pressure on the fish stocks and some anxiety as to the extent to which the resources of fish and shellfish can continue to support increased fishing effort. The need for effective resource management to safeguard the shrimp stocks against over-exploitation, was identified at appraisal, and hence the proposal that a Catch Monitoring Unit be established by DOF. A great deal of information has been gathered over the years at each of the three fishing harbors, on fishing effort and on catch quantities and values for different species groups and classes of fishing vessel, but audit believes more needs to be done to collate and analyze such information for the State as a whole, and in conjunction with GOI fishery research agencies to monitor the progressive effects of the fishery on the stocks. Audit agrees with state and national fishery

administrators and scientists that there is no imminent risk of overfishing, but there are some warning signs. Tables 8(a) and (b) indicate that despite the progressive increase in fleet size, marine production has stagnated since 1983/84 around an average of 138,000 tons per year but the quantity of shrimp, as reflected by exports from Visakhapatnam, has halved over the six year period from 1985/85 to date. The audit mission was also informed by trawler and MFV owners that daily shrimp catch rates are now only half as large as they were ten years ago. In addition to the quantities of mature shrimp/prawn caught at sea, audit was also aware of large quantities of juvenile prawn which are netted from their nursery grounds in tidal inlets and lagoons for sale to fish farmers, thereby adding to pressure on the stocks and to the need for even greater vigilance for the future well-being of the fishing industry along the Andhra Pradesh coast.

3.65 Economic rates of return were estimated at appraisal as 34% average for the three harbor developments, 40% for the village roads component and 35% for the project as a whole (excluding the technical assistance component). The completion mission was unable to recalculate the ERR figures because of a lack of data and the non-completion of Kakinada and Nizampatnam harbors, but pointed out that the principal benefits would accrue from improved fish quality, on account of better landing facilities and increased fish and shrimp production resulting from increased numbers of MFVs and an increase in fishing days per vessel/year. Audit also lacked the time or data for ERR recalculations but notes that all three harbors are now complete, except for the Nizampatnam training walls, but with the exception of Visakhapatnam they took a lot longer to finish and cost much more than was estimated at appraisal. Secondly, although the MFV credit component was cut short, growth in size of the fishing fleet has continued throughout, stimulated no doubt by the improved harbor facilities and by the increase in catch value. Finally, the village access roads component has succeeded in transforming the lives of the village populations probably beyond all appraisal expectations. It should have been a task for the Monitoring and Evaluation Unit to have collated all the data needed for such reassessments and it is a point to which supervision missions may need to give more attention in future.

3.66 Although it has not been possible to quantify the outcome, for the reasons given above, it does seem that the ERR for village roads expenditure will be at least as great, if not higher than the appraisal estimate of 40%. The return for Visakhapatnam should be about the same as before, namely 28%, but inevitably because of the delays and higher costs, Kakinada (45%) and Nizampatnam (17%) will show much lower returns. The overall project ERR, originally estimated at 35% seems likely to decline to around 20% as its post completion value.

C. OVERALL EVALUATION FINDINGS AND ISSUES

I. MATTERS COMMON TO BOTH PROJECTS

Harbor Design

3.67 Both projects experienced considerable difficulty and time/cost overruns because of the discovery, after the event, that pre-appraisal site investigation, design and estimated costs were inadequate and misleading. There was no reference to any need for precautions against adverse weather, despite the vulnerability of both areas to hurricane force tropical storms and the designs were also inadequate in failing to identify the needs for and availability of specialized equipment, such as rock dredgers, floating heavy lift cranes and floating pile drivers, etc.

3.68 Audit endorses the PCR finding that such work must be completed, prior to appraisal, to a stage where reliable data can form the basis for realistic tendering and budgeting, even if this means postponing appraisal. It is noted that instructions along these lines were issued in the Bank's Operational Manual, Statement No. 2.28 of October 1978. This statement was too late by 18 months to have been of help to the Gujarat project, but was only 5 months after Board Approval for the Andhra Pradesh credit. Audit believes that the directive must have derived from experience of a number of similar cases, the backgrounds to which should have been known to the Region even if not necessarily to the Board. Thus, in the latter case at least, a more critical review of the evidence would have been justified, prior to submitting the project to the Board.

Harbor Construction

3.69 In addition to difficulties and delays directly attributable to design inadequacies, both projects suffered excessive delays caused by failure to include adequate provision for cost escalation in the construction contracts. It appears to be common practice in India to rely on arbitration to resolve contractual disputes in such cases, but a great deal of time can be wasted and added cost incurred in the process, which could be avoided by more careful attention to the wording of cost escalation clauses in such contracts, having the interests of both parties in mind. It is almost inevitable that construction contracts extending beyond two years will experience added costs and therefore it is recommended that a number of past contracts from Indian projects be reviewed with the aim of identifying a form of words to minimize the need to seek arbitration and that whenever such civil engineering construction contracts are submitted to IDA in future, the escalation clauses are checked with this aim in mind before granting approval.

Credit for Fishing Vessels

3.70 In both project areas the intended increase in fishing effort by means of credit for additional MFVs, was frustrated because the participating commercial banks were alarmed by escalating arrears and eventually refused to consider any further applications. In both cases also, the submission of banking

plans by NABARD to IDA for approval were conditions of disbursement/effectiveness, and it must be assumed that the plans were flawed in that the participating banks were ill-prepared and unwilling to set up effective loan recovery machinery at the places where fishermen sell their catches. Reliance on the cooperative enterprise GFCCA, in Gujarat to collect repayment installments also failed because it was unable to compete successfully with private buyers.

3.71 A credit specialist was included in each of the appraisal teams but neither SAR contains any significant consideration as to the arrangements needed for effective management of the sub-loan portfolios. No provision was made during supervision for appropriate expertise to guide NABARD and the other banks and in consequence the lending program went from bad to worse. The PCRs record GOI's suggestion that such credit be routed through the States' fisheries administrations where past loan recoveries have been more successful.

3.72 Although audit agrees that GOI's suggestion, had it been made at the outset, might have eased the project's credit recovery record, it would not have contributed to the implicit longer term aim of using the MFV credit component to generate a relationship of understanding and confidence between the banks and the fishing industry. It is essential that the industry's recurring credit needs in future can be provided through local commercial banking channels, but the banks also need guidance and assistance in this regard. Audit therefore considers that this component was inadequately prepared, in both cases, and recommends the provision of technical assistance in any similar circumstances in future, to assist the lending agencies in setting up appropriate systems for sub-loan appraisal and recovery, responsive to the fishermen's way of life.

3.73 These systems should include maintaining regular contact with clients to ensure that the bank understands the seasonal variability of fishing and is forewarned about times when the fisherman has to migrate after the fish shoals; making arrangements on those occasions for repayments to be accepted at other branches or even different banks. The banks should gather intelligence about market demand, fish prices, seasonal changes, fuel and fishing gear costs and any other relevant information, to improve their own understanding about the sector and for distribution to their fishing clients to assist them in obtaining better prices for their fish, etc. In this way it should be possible to build up a sufficient volume of business, in the case of an industry of the size such as exists in India, to amply justify any outlay the banks have to incur in establishment costs.

Fish and Shellfish Resources

3.74 Audit is concerned that neither SAR contained more than passing reference to the risks of overfishing or to measures that might be needed to maintain the fish stocks and fish production at safe sustainable levels. Although an appraisal team member, in a separate report drew attention to a declining trend in catch rates in the Gujarat fleet, and current evidence suggests that this trend is still continuing, it does not appear that the Gujarat stocks are in imminent danger because the statistics show total annual catches to be increasing year by year, concurrently with the progressive increase in size of the fishing fleet. The position in Andhra Pradesh is less clearcut because

whereas vessel owners at Visakhapatnam claim that their catch rates per fishing day have been reduced by 50% in recent years, catch records collected by the Kakinada FTO suggest an increase in daily catch rates. On the other hand, total annual catches of marine fish in Andhra Pradesh do not reflect such increases but have fluctuated around a mean level of 140,000 tons during the past 5 years despite the annual increase in fleet size.

3.75 The view of scientists from the Fishery Survey of India that there is no evidence as yet of actual overfishing is accepted, but audit believes that development in both States has reached a stage where very careful monitoring will be required from now on. Audit also suggests that the preparation and appraisal stages of any future fisheries development projects should include a thorough analysis of the fish resources concerned and their sustainable potential in relation to the increased fishing effort and fish production being proposed. As in the case of Andhra Pradesh, catch monitoring may be proposed, but if so then the institution, staff, equipment and any other resources needed must be identified and provided for. It may also be necessary to spell out how the information so generated can be fed into and thereby improve the existing system for resource management and fisheries regulation.

Boat-building Timber Supplies

3.76 The issue of timber supplies for fishing vessel construction, which is becoming ever scarcer and more expensive, was not mentioned in the SAR/PCRs of either project but it was seen by audit as an imminent constraint of major proportions which is already affecting the fishing industry in both States and nationally. Hitherto, the preferred timber for MFV construction in India has been teak, but in common with mahogany and other tropical hardwoods which are also in high demand worldwide, for furniture-making and other purposes, tree felling has greatly exceeded forest regeneration and has thereby caused the current shortage. Generally speaking, the plantation softwoods like cypress and pine which are more readily available, are not suitable for boat building, although cedar can be used in some cases. The problem affects artisanal fishermen as well as the mechanized fishery, in that craft such as the Andhra Pradesh "navas" are also traditionally made of teak wood and there are acute shortages of suitable mango wood logs from Kerala for dut-out canoe production, and of catamaran timber (*Albizia* spp) which comes mainly from Tamil Nadu.

3.77 Unless early action is taken to safeguard future timber supplies for boat building it may prove impossible to expand or even to maintain the fishing fleet at present levels in years to come, notwithstanding that certain vessel classes, e.g. the Gujarat dug-out canoe, can be replicated in FRP and some of the larger craft could possibly be replaced by ferro-cement or steel built vessels. In Andhra Pradesh alone, some 3700 traditional boats and 70 MFVs are needed each year as replacements for the existing fleet through normal wear and tear. Calamities such as the May 1990 cyclone add massively to the problem, in that more than 7000 artisanal craft were totally lost or damaged beyond hope of repair, and a further 6000 were less severely damaged but in need of timber to restore them to a sea-worthy state. There is insufficient hardwood lumber available in Andhra Pradesh for more than a small fraction of the quantity needed for such a large repair and replacement exercise.

3.78 It is recommended that fisheries and forestry staff from all the coastal States review current and future timber requirements for boat building, investigate possible alternative wood varieties to verify their suitability, and ensure that future tree planting programs include adequate provision for longer term fishing industry needs. At the same time and in order to make optimum rational use of timber stocks, fisheries staff should consult with industry representatives to decide which vessel types, such as the Gujarat dug-out canoe, can be replaced by acceptable alternatives made from other materials. IDA might consider supporting these actions by means of appropriate provision in the technical assistance components of forthcoming fisheries and/or forestry projects.

Technical Assistance - Fisheries Training

3.79 The Andhra Pradesh project included provision for up-grading the technical expertise and managerial capacity of selected DOF and APFC staff members by means of study tours to neighboring SE Asian countries. In this respect the project was an improvement on the earlier Gujarat project, which lacked any provision for staff training except, to a very limited extent, by visiting harbor management consultants. Audit was impressed by the technical training facilities for fisheries personnel, e.g. at Kakinada, but observed that expertise was spread rather unevenly between the various fishing centers and States. For example, FTO staff at Veraval and Mangrol in the Gujarat project area appeared to have a clearer idea about aims and techniques and a more positive approach to their implementation than their colleagues in Andhra Pradesh, whereas APFC boatyard staff appeared to be more advanced in FRP technology than their Gujarat counterparts.

3.80 It is clear that Indian staff can learn a great deal from experience in other parts of India but unfortunately, there appear to be few, if any opportunities for the technical staffs concerned to meet to share their knowledge or to study different approaches to similar tasks. It is therefore recommended that the various state fishery administrations establish reciprocal arrangements for study tours, technical workshops and staff exchanges, etc., and that IDA considers the inclusion of supporting provision as and when possible.

Bank Performance

3.81 Audit endorses the views expressed in both PCRs that the respective appraisal missions were in error as regards implementation time schedules, the targets for which were over-optimistic. Appraisal also over-estimated the institutional capacity of NABARD, GFCCA and the participating commercial banks to implement the two credit components and failed to include any provision (in terms of expertise, manpower and cost) to enable the banks to set up effective systems for fisheries credit management. Audit also considers that appraisal was premature in both projects, because in neither case were the harbor and credit components adequately prepared, even after appraisal.

3.82 The decision, in the case of Gujarat to upgrade what was scheduled as a pre-appraisal/preparation mission, to full appraisal status, has to be viewed in retrospect as an error of judgement. Likewise, with the Andhra Pradesh project, the decision by the appraisal mission to substitute a major new harbor

development in place of the relatively minor improvements originally proposed at Kakinada harbor, whilst undoubtedly correct in terms of perceived developmental needs for the expanding fishing fleet, should have triggered a pause in the appraisal process to allow time for the necessary additional site survey, planning and budgetary work to be completed before finalizing the pre-implementation phase. As it was, although provision was made for time to carry out the surveys during the implementation period, the poor soil conditions encountered and the scale of consequent engineering design and construction difficulties that followed invalidated the appraisal targets which proved far too optimistic, and created a situation from which the project was unable to recover.

3.83 Throughout the implementation periods successive supervision missions repeatedly warned, quite correctly that the projects were falling behind schedule and that urgent actions were needed by the two State governments to speed up, e.g. agreements with contractors concerning cost escalation claims, and by NABARD and the banks concerning the credit program, etc. The resultant impression towards the end was that the main responsibility for poor performance lay with the local authorities. It would be wrong to suggest, in retrospect, that most if not all of the parties concerned, in India, could not have done more at particular times to accelerate progress and minimize time and cost overruns, but it would be equally wrong not to recognize that major delays to key components, such as Kakinada and Veraval harbor construction and MFV credit, stemmed directly from inadequate preparation and appraisal. It seems strange that when warning about delays or over-expenditure compared to appraisal targets, none of the supervision missions ever questioned whether the targets were themselves unrealistic or incorrect despite clear evidence to that effect.

3.84 The adverse impression created by supervision records unquestionably influenced the Bank's decisions not to field at least one more supervision mission during the final 18 months of each project, and to refuse requests by GOI for a second 12 month extension to the Gujarat project and for an 18 month extension to the Andhra Pradesh project. However, it is not clear to audit what purpose was served by this hard line on closure dates. Enquiries in Washington revealed that many earlier Indian projects had overrun to the extent that there appeared to be an expectation of almost ad-lib automatic extension on request. The Bank held that as most of the remaining expenditure did not involve foreign exchange, there was little to be gained from extension in these two cases and they could therefore serve as examples to correct the erroneous expectation concerning postponement of closing dates.

3.85 The Bank's decisions ignored the fact that the loan and credits were always intended to cover a large part of local costs as well as the foreign exchange requirements. As already pointed out in Parts A and B, the closures and cancellation of the undisbursed balances of the Gujarat loan and Andhra Pradesh credit caused yet further delay in implementation and serious interference with other locally financed developments as a result of GOG and GOAP having to divert funds already committed elsewhere in order to complete these two projects. Audit fully agrees with the necessity for financial discipline but, having regard to all the circumstances considers that IDA was misdirected in refusing extensions, particularly for the Andhra Pradesh project. The aim of providing an object lesson through the refusal to postpone closure also appears to have fallen short of the mark, in that audit has observed that the third fisheries project in India

(Inland Fisheries, Credit 963-IN), also had to be extended by no less than three years prior to its final completion in March 1989.

II. GUJARAT PROJECT

Development of Artisanal Fishing Craft

3.86 The development of an FRP canoe as a substitute for the traditional wooden dug-out, from scratch to the stage of general acceptance of a production model by the fishing community, within the project period, is regarded by audit as an outstanding success. The fact that more than 800 of these craft have come into use since the project ended, confirms that they are now firmly established and it is especially pleasing to note that they are being produced by state, cooperative and private enterprises in competition. The procedure adopted of working closely with fishermen throughout, from the production of prototypes, their testing by selected fishermen under actual working conditions, modification in accordance with fishermen's comments and suggestions and retrial, to final acceptance of the production design, was wholly correct. It serves as a model for future projects anywhere in the world, which involve the development or modification of fishing craft for artisanal or small scale fisheries.

3.87 Past experience with Bank funded fishing vessel development has not always been so satisfactory, e.g. Ghana Fisheries, Credit 163-GH; Tunisia First Fisheries, Credit 270-TUN; Tanzania Fisheries, Credit 652-TA, etc. (see World Bank Report No. 4984, Harvesting the Waters - A Review of Bank Experience with Fisheries Development, March 1984). Common factors in most of these cases were undue haste to finalize boat designs and failure to involve the expertise of local fishermen to a sufficient extent. In addition, in India's case it was feasible, albeit expensive, to use glassfibre reinforced plastic (FRP) as a boat construction material because the synthetic resins and other raw materials involved are made in India. In most other developing country situations these items have to be imported and are therefore subject to foreign exchange restrictions, over and above actual cost considerations. In such cases where hardwood timber shortages are giving cause for concern, other materials worth consideration include ferro-cement, cold-moulded veneer-strip laminated hulls (Burundi Fisheries, Credit 626-BU), and even coconut palm wood (Maldives Fisheries, Credit 907-MAL).

Fishing Vessel Engines

3.88 The choice of inboard diesel engines for the MFV credit program presented no difficulty because suitable engines manufactured in India, were already in widespread use in the fishing fleet. However, outboard motors for the canoe fleet had to be imported and were in great demand but acutely short supply because of foreign exchange restrictions. Despite the shortage, fishermen who had used OBMs for many years, had very firm preferences as to the type and make of OBM they wished to buy and, unfortunately, the record suggests that little or no attention was paid to their views prior to starting procurement. The Bank stipulated that procurement should be by international competitive bidding (SAR, para. 5.06) and also insisted on acceptance of the lowest responsive bid (4th

Supervision report), despite protests from fishermen that this was for an unpopular make and not the one they wanted, for which they were willing to pay a higher price.

3.89 The consequence was that only 428 OBMs were purchased instead of 1400, and despite the shortage, they sold to fishermen very slowly. Audit sees no reason why the Bank should not have sanctioned procurement of the make that was wanted, instead of which the further import of OBMs was discontinued because of the Bank's insistence on compliance with ICB conditions. A similar attitude was adopted with the First Fisheries Project in Tunisia which also resulted in a negative response from the fishermen, who quite reasonably argued that as they had to pay for the engines from their own earnings, they should be able to choose which one they wanted. It is recommended that in such cases the ICB procedure be modified so as to result in a short list of 3 or 4 responsive bidders from which the fisherman can exercise his choice. It is to be hoped that under these circumstances, one or more of the popular makes would figure in the short list.

Fishing Harbors

3.90 As made clear in para. 3.5 above, audit considers that the investment in developing the two fishing harbors has, despite the delays and other difficulties, proved very well worthwhile in the end. Utilization of both has progressed to a stage where both harbors are now in need of expansion to cater for excess demand for space, or alternatively, where consideration needs to be given to designing a third harbor to help spread the load. In any case, audit noted that development of Veraval harbor under the project lacked one important feature, namely that there is no provision for landings by the canoe fleet which now numbers in excess of 400 craft. It is therefore strongly recommended that this omission be rectified at an early date, possibly in the area adjacent to the eastern breakwater which is not being properly utilized at present.

III. ANDHRA PRADESH PROJECT

Kakinada Harbor

3.91 Although the new fishing harbor at Kakinada is now fully operational and is in daily use by the fleet for landing catches and for refueling, many of the MFVs are still berthed between trips along the old harbor jetties in the center of Kakinada city because that is where the crews live and, as yet where the boat repair yards and workshops are still located. Fish sold in the new harbor auction halls still has to be transported by road to the processing plants which have not yet been moved from their original locations alongside the old harbor jetties. The plans for the new harbor included an area of land for all the onshore facilities and services but the project did not include any inducement or provision to cover the relocation costs. Audit regards this as a serious omission which is having an adverse effect on harbor utilization and on crew morale because of the lack of nearby accommodation.

3.92 During the visit to Kakinada, audit was informed that an early start was expected on construction of a new deep water commercial port alongside the new fishing harbor. The latest plans show this being built out from the shore to the south of the fishing breakwater and jetties, and extending further out seaward, thus creating an enclosed fishing harbor basin with its own separate entrance for the fleet, thereby avoiding any risk of navigational interference with cargo ships. This development, to be financed by ADB, will give much better shelter to the currently rather exposed jetties at the fishing harbor and is therefore very welcome. The only adverse consequence is that the whole land area adjacent to the port development site is zoned for commercial and industrial use, making it difficult if not impossible to resolve the problem of fishing crew's accommodation by nearby new construction. It appears that the only solution will be for the fishing vessel owners, together with other fishing and commercial port employers, to organize special bus services to transport their employees from their existing residential areas to and from work.

Village Access Roads

3.93 As detailed in para. 3.38 above, except for a very short distance where road construction was held up by land acquisition problems, audit found that this component of the project was completed expeditiously and within budget. It is also clear that the investment has had a dramatic and most beneficial impact on the lives of the inhabitants of the previously inaccessible coastal villages. In contrast to Gujarat, where the equivalent component included provision of water supplies and cooperative fish-stores at the villages as well as the access roads, in Andhra Pradesh only the roads were built, except for the water supply at Nizampatnam. Audit regards access as the key element and strongly recommends including similar components in future projects. Water supplies to such villages should also be considered whenever possible because it was observed that traditional supplies from open wells or streams are vulnerable to contamination, especially at coastal villages in the aftermath of disasters such as the May 1990 cyclone.

3.94 No insurmountable problems, in terms of manpower, equipment or expertise were experienced during the road construction phase by the Roads and Buildings Department, but audit is anxious about the rather small annual recurrent allocations for routine maintenance which are quite inadequate to the task of repairing damage caused by the cyclone.

Experimental Trawlers

3.95 It was not possible to draw any conclusions about the suitability or cost effectiveness of these craft, compared with the imported vessels which form the bulk of the off-shore shrimp trawler fleet. The audit visit coincided with the final commissioning of the two locally built, wooden hulled trawlers after many delays in design, construction and fitting out which, as pointed out earlier, were to some extent exacerbated by the Bank's decision not to allow any postponement of the project's Closing Date. Nevertheless, the two vessels appeared to have been well built and adequately equipped, so that despite the delays there is interest in seeing how well they perform during the next few months.

IV. OVERALL ASSESSMENT

4.1 Audit considers that both projects performed significantly better than has been believed hitherto by Bank staff. With the exception of the two MFV credit components, all the facilities, services and equipment which were intended, have been provided, albeit over a longer time span and in some cases at rather higher cost than was planned. GOG and GOAP persisted in their efforts to complete the remaining unfinished parts of the construction program after the IDA accounts were closed. They succeeded but only at considerable cost, in terms of disrupting other locally funded activities to provide savings sufficient to make good the shortfall caused by cancellation of the undisbursed balances of Bank funds. This removes any doubts that might have been felt as to the commitment of both state governments to the attainment of project objectives.

4.2 Most of the problems that were encountered were attributable, in audit's opinion, to inadequate preparation and premature appraisal which failed to take sufficient account of the lack of local site data for harbor construction, ignored the likely impact of prevailing climatic conditions and overlooked the ill-preparedness of local banks for the intended fisheries credit program. Despite all the problems and delays, the five harbor developments were completed, the fishing fleet has continued to expand, product quality and value has been greatly enhanced in the project area, the FRP artisanal canoe development in Gujarat has been an outstanding success, as also was the village access roads program in both States.

4.3 Bearing in mind that the original proposals for coastal fisheries development in India covered Kerala, Tamil Nadu, Karnataka and Maharashtra States in addition to Gujarat and Andhra Pradesh, and that the subsequent failure to follow up on the others may have been consequent on the belief that the first two projects had not performed well, audit considers the outcome as good enough to more than justify taking another look at the current needs for development of the fishing industry in all these areas.

Table 1

GUJARAT FISHERIES PROJECT
(Loan 1394-IN/Credit 695-IN)

Basic Information on Project Area (as per census)

1.	Coastline	-	117 kilometers		
2.	Fishing Centers	-	(10; Veraval, Mangrol, Mangrol-Bava, Chorwad, Hirakot, Suttrapada, Dhamlej, Mulwarka, Madhwad and Kotda		
				<u>1978</u>	<u>1988</u>
3.	Total Fishing Households			3,464	5,545
4.	Fishing population			26,921	42,750
5.	Average persons/household			7.7	7.71
6.	Total No. of Fishing Vessels			1,795	2,815
7.	Fishing Vessels per Km coastline			15	24
8.	Total Powered Vessels			1,475	2,793
9.	Total non-powered Vessels			320	22
10.	Fishing Vessels per Household			0.52	0.51
11.	Total Quantity Fish Landed (mt)			73,034	196,359

Source: Commissioner of Fisheries, Government of Gujarat.

Table 2

GUJARAT FISHERIES PROJECT
(Loan 1394-IN\Credit 695-IN)

Comparison of Appraisal and Actual Costs

<u>Item</u>	<u>SAR Estimates</u> <u>(Rs '000)</u>	<u>PCR Assessment</u> <u>(Rs '000)</u>	<u>Actual</u> <u>(Rs '000)</u>
Harbor Works Component	170,878	244,353	218,500
Traditional Fishing Component	32,754	12,426	13,003
Fishing Vessels (MFVs)	66,888	33,977	33,977
Netting Machines	1,802	2,035	2,035
Technical Assistance	<u>37,976</u>	<u>32,411</u>	<u>33,011</u>
	310,298	325,202	300,526
Fish Processing Plant	<u>31,376</u>	<u>294</u>	<u>294</u>
	<u>341,674</u>	<u>325,496</u>	<u>300,820</u>

Sources: PCR Table 1 and Final Outcome Figures supplied by Commissioner of Fisheries, Ahmedabad.

Table 3

GUJARAT FISHERIES PROJECT
(Loan 1394-IN\Credit 695-IN)

Fish Landings in the Project Area (mt)

<u>Fishing Center</u>	<u>1977/78</u>	<u>1981/82</u>	<u>1985/86</u>	<u>1988/89</u>
Veraval	56,419	81,609	140,518	168,643
Mangrol	6,572	9,081	20,305	16,308
Mangrol-Bava	838	612	471	302
Chorwad	1,122	1,006	991	864
Sutrapada	1,065	808	1,713	2,935
Hirakot	1,378	1,858	399	677
Dhamlej	1,114	851	1,486	3,305
Muldwarka	1,982	1,513	1,320	1,049
Madhwad	1,537	1,955	7,749	1,241
Kotda	1,007	740	6,060	1,035
Total	<u>73,034</u>	<u>100,033</u>	<u>181,012</u>	<u>196,359</u>

Source: Commissioner of Fisheries, Government of Gujarat.

Table 4

GUJARAT FISHERIES PROJECT
(Loan 1394-IN\Credit 695-IN)

Fishing Vessels Using the Project Harbors /a

	<u>1977</u>	<u>1981</u>	<u>1985</u>	<u>1988</u>
<u>Veraval</u>				
148 m MFV Trawlers	413	581	646	769
148 m MFV Gill-netters	84	74	65	90
Motorized Canoes	162	223	301	395
Non-powered Craft	53	23	18	16
<u>Mangrol</u>				
148 m MFV Trawlers	98	166	167	195
148 m MFV Gill-netters	4	7	-	12
Motorized Canoes	12	85	122	183
Non-powered Craft	60	29	2	-
<u>Project Area Villages /b</u>				
148 m MFV Trawlers	47	89	106	110
148 m MFV Gill-netters	39	48	22	66
Motorized Canoes	566	718	835	973
Non-powered Craft	248	113	16	6
<u>Total: Project Area</u>				
148 m MFV Trawlers	558	836	919	1074
148 m MFV Gill-netters	127	129	87	168
Motorized Canoes	740	1026	1258	1551
Non-powered Craft	361	165	36	22

/a Census taken before commencement of season.

/b Villages of Mangrol Bava, Charwad, Hirakot, Sutrapada, Dhamlej, Muldwaka, Madhwad and Kotda.

Source: Commissioner of Fisheries, Government of Gujarat.

Table 5(a)

GUJARAT FISHERIES PROJECT
(Loan 1394-IN\Credit 695-IN)

A. Average Catch Per Boat Per Day
(kg)

<u>Vessel Type</u>	<u>1978/79</u>	<u>1989/90</u>
Trawler - long trip	3290	2923
Trawler - short trip		871
Gill netter	796	569
Outboard Motor/Canoe	338	110
Non-powered Boat	21	11

Table 5(b)

B. Average Receipts Per Boat/Trip
(Rupees)

<u>Vessel Type</u>	<u>1978/79</u>	<u>1989/90</u>
Trawler - long trip	n.a.	6,867
Trawler - short trip	1022	1,214
Gill-netter - long trip	-	11,615
Gill-netter - short trip	296	2,695
Outboard Motor/Canoe	164	938
Non-powered Boat	95	182

Source: Fisheries Terminal Division, Veraval.

Table 6

ANDHRA PRADESH FISHERIES PROJECT
(Credit 815-IN)

Basic Information on Project Area

1.	Andhra Pradesh coastline length	-	974 kilometers
2.	Continental shelf area (to 200 m. depth)		31,044 sq. km.
3.	Fishing Centers	-	379 fish landing centers including main fishing harbors at Visakhapatnam, Kakinada, Machilipatnam, Nizampatnam, Bhavanapada and Krishnapatnam.
		<u>1978/79</u>	<u>1989/90</u>
4.	Fishing Population	325,000	435,000
5.	Active Fishermen	75,000	84,000
6.	Fishing Fleet:		
	(a) Trawlers (23 m - 55 m)	65	252
	(b) MFVs (9 m - 11 m)	600	1,075
	(c) Others - mainly artisanal	n.a.	37,515
7.	Fishing Vessels per km coastline	n.a.	39.88
8.	Estimated Fish Landings:		
	(a) Artisanal catches	n.a.	76,000 mt.
	(b) Industrial catches	n.a.	60,000 mt.
	(c) Total for year - approx.	105,000 mt.	136,000 mt.

Source: GOAP Fisheries Department Annual Reports and other Fish
Department reports and communications.

Table 7

ANDHRA PRADESH FISHERIES PROJECT
(Credit 815-IN)

Comparison of Appraisal and Actual Costs

<u>Item</u>	<u>SAR Estimates (Rs Million)</u>	<u>PCR Assessment (Rs Million)</u>	<u>Actual (Rs Million)</u>
1. <u>Harbor Development:</u>			
Visakhapatnam	80.059	69.151	66.680
Kakinada	76.701	84.436	111.481
Nizampatnam	10.203	11.892	27.899/a
2. Village Access Roads	41.767	41.649	48.520
3. Nizampatnam Water Supply	0.579	1.552	1.552
4. Fishing Vessels	80.389	27.811	27.811
5. Processing Plant	12.300	nil	nil
6. <u>Technical Assistance:</u>			
Consultants	0.680	0.802	0.802
Study Tour	0.900	0.323	0.323
23 m Wooden Trawlers	10.000	14.297	22.343
Totals	313.578	251.913	307.411

/a Includes the cost of training walls, estimated at Rs 7.8 m.

Sources: PCR Table 1, Final outcome figures/estimates supplied by Fisheries Department and Ports Department staff.

Table 8

ANDHRA PRADESH FISHERIES PROJECT
(Credit 815-IN)

(a) Andhra Pradesh Marine Fish Production

<u>Year</u>	<u>Quantity (mt)</u>	<u>Value (Rs Lakhs)</u>	<u>Av. Value/ton (Rs)</u>
1981-82	107,786 mt	n.a.	-
1982-83	126,004 mt	n.a.	-
1983-84	164,700 mt	n.a.	-
1984-85	132,720 mt	13,147.0	9,906
1985-86	115,250 mt	13,127.4	11,517
1986-87	139,259 mt	15,778.4	11,330
1987-88	136,456 mt	18,523.9	13,575

Source: GOAP Fisheries Department Annual Reports, 1985/86 and 1987/88.

(b) Shrimp Exports From Visakhapatnam

<u>Year</u>	<u>Quantity (mt)</u>	<u>Value (Rs Lakhs)</u>	<u>Av. Value/ton (Rs Lakhs)</u>
1983/84	3,932	3,158.97	0.805
1984/85	4,956	3,907.40	0.788
1985/86	5,084	4,701.71	0.925
1986/87	4,831	5,413.01	1.120
1987/88	3,465	3,759.79	1.085
1988/89	1,288	1,778.27	1.381
1989/90	1,939	2,293.57	1.183

Source: GOAP Fisheries Department Annual Reports

Table 9

ANDHRA PRADESH FISHERIES PROJECT
(Credit 815-IN)

Marine Fishing Fleet Statistics

<u>Location and Vessel Type</u>	<u>1979</u>	<u>1984</u>	<u>1990</u>
1. <u>Visakhapatnam Harbor</u>			
Trawlers (23 m) /a	65	77	82
MFVs (11 m) "Sorvah"	30	18	
			176
MFVs (10 m) "Royya"	152	167	
MFVs (9 m) "Pablo"	15	-	-
2. <u>Kakinada Harbor</u>			
Trawlers	-	-	5
MFVs (11 m) "Sorvah"	12	16	16
MFVs (10 m) "Royya"	128	86	60
MFVs (9 m) "Pablo"	32	11	7
3. <u>Nizampatnam Harbor</u>			
Trawlers	-	-	-
MFVs (11 m) "Sorvah"	10	132	144
MFVs (10 m) "Royya"	63	63	53
MFVs (9 m) "Pablo"	40	23	8
4. <u>Other Coastal Centers</u>			
MFVs and other mechanized craft	120	n.a.	611
Non-mechanized/artisanal boats	n.a.	n.a.	37,515

/a About 170 large trawlers (30-50 m) are also based in Visakhapatnam.

Sources: GOAP Fisheries Department Annual Reports and other communications.

Attachment I

COMMENTS OF THE DEPARTMENT OF AGRICULTURE AND COOPERATION ON THE DRAFT PROJECT
PERFORMANCE AUDIT REPORT FOR GUJARAT AND ANDHRA PRADESH FISHERIES PROJECT

1. This department agrees generally with overall assessment in the PPAR.
 2. Both the projects performed significantly better than has been hitherto believed by the Bank staff. The outcome has been considered good enough to justify taking up more projects for development of the Fishery industries. Therefore the Government of India should capitalize on this aspect to obtain the World Bank's assistance for more fisheries projects. We have proposed to seek World Bank's assistance for Tuna Fishery Harbour at Cochin which is a very specialized job.
 3. The impact of the project has been commendable as seen from the rapid growth of fishing fleet and increase in the catch. The increase in the fishing fleet is continuing on account of harbour facilities provided under the project. Further expansion of the harbours to accommodate the increasing fishing fleet is being planned to avoid any congestion in the near future.
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