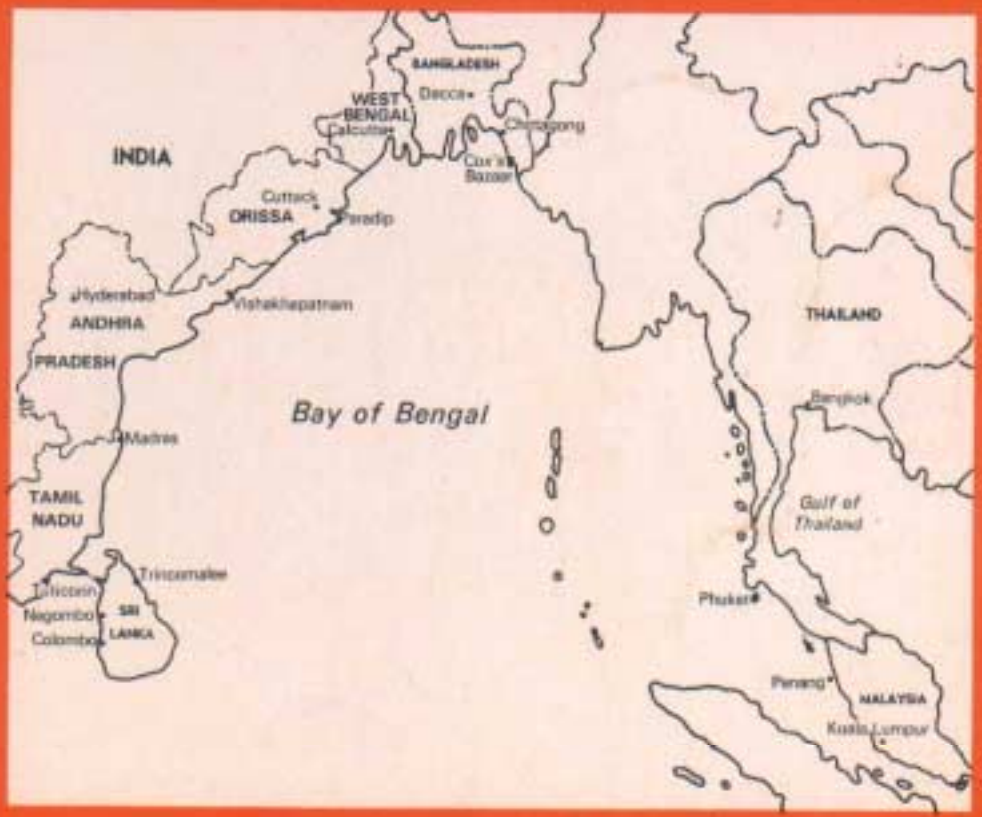
BAY OF BENGAL PROGRAMME
Development of Small-Scale Fisheries

BOBP/REP/19
(GCP/RAS/040/SWE)

Report of the Eighth Meeting of the Advisory Committee

Dhaka, Bangladesh
16 – 19 January 1984



SIDA SWEDISH INTERNATIONAL DEVELOPMENT AUTHORITY

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

BAY OF BENGAL PROGRAMME BOBP/REP/19

Development of Small-Scale Fisheries GCP/RAS/040/SWE

Report of the Eighth Meeting of the Advisory Committee

January 16-19,1984
Dhaka, Bangladesh

Executing Agency :

Food and Agriculture Organisation of the United Nations

Funding Agency :

Swedish International Development Authority

Development of Small-Scale Fisheries in the Bay of Bengal
Madras, India, May 1984

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PREFACE

This document is the report of the eighth meeting of the Advisory Committee of the Project for Small-Scale Fisheries Development of the Bay of Bengal Programme (BOBP). The meeting was hosted by the Government of Bangladesh and was held in Dhaka from January 16-19, 1984.

The report records the deliberations and conclusions of the meeting and was approved by the committee.

The report includes a summary of progress made by the project in 1983, the fifth year of operation. It also presents suggestions for a BOBP beyond 1985. The report therefore serves as a source of reference to officials of fisheries agencies of the countries concerned and to donor agencies. It may also interest other institutions and individuals engaged in small-scale fisheries development, particularly in the Bay of Bengal region.

"Development of Small-Scale Fisheries in the Bay of Bengal", GCP/RAS/040/SWE, is funded by the Swedish International Development Authority (SIDA) and executed by the Food and Agriculture Organisation of the United Nations (FAO). Five countries are members — Bangladesh, India, Malaysia, Sri Lanka and Thailand. Its aims are to develop, demonstrate and promote appropriate technologies and methodologies to improve the conditions of small-scale fisherfolk and to increase the supply of fish from the small sector in the member countries.

The Advisory Committee is composed of representatives of the five member-countries plus representatives of FAO and SIDA. The committee meets once a year. Earlier meetings were held in Colombo (1976), Madras (1977), Chittagong (1978), Phuket (1979), Penang (1980), Colombo (1981), and New Delhi (1983).

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CONTENTS

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REPORT OF THE EIGHTH MEETING OF THE ADVISORY COMMITTEE

1. The meeting was convened at Dhaka. Appendix 1 gives a list of the participants.

2. Mr. S. P. Jakhanwal, Joint Secretary, Department of Agriculture and Cooperation, Ministry of Agriculture, India, Chairman of the 7th Advisory Committee, called the meeting to order.

3. Mr. A. B. Chowdhury, Joint Secretary in Charge, Fisheries and Livestock Division, Ministry of Agriculture, Bangladesh, welcomed the delegates *to* Bangladesh on behalf of his government. He pinpointed the emphasis placed by his country on fisheries development as well as the development and improvement of the socio-economic conditions of artisanal fishermen and hoped that these priorities would be taken into consideration in the discussions at the advisory committee.

4. Mr. Lars Augustinson, Deputy Chief, Agriculture Division, SIDA, expressed his satisfaction that SIDA as a donor agency had been able to work in close cooperation with FAO and the member countries and with the real involvement of the people of these countries in the work of the project. Ten years after its genesis with the planning mission of 1974, the work of the project confirmed that the regional approach was justified. He referred to the unanimous view of the 7th Advisory Committee meeting that "the BOBP type of support at a high level to small-scale fisheries development . . . . . is a long-term need to which there is no end in sight" which is in accordance with the concept of rural development as a process which has to be considered in terms of decades rather than of years. He recounted the trends in the Swedish economy that had led to his government's decision to grant an extension for the project of only 1½ years and stated that the government had however not decided to terminate support after that period. He hoped that the Committee would be able to deal successfully with the challenges of the uncertainty generated by this decision and find a viable solution for the future. SIDA strongly believed in the close involvement of and participation by the people as the basis of rural development; in order to achieve this, however, an organisational set-up was essential. Such a set-up exists in the small-scale fisheries development project. Consequently, although SIDA had earlier expressed interest in confining its support to specific problem areas rather than to the project in its present form, it is felt possible to deal with those areas within the existing framework of the project.

5. Dr. W. Krone, Director, Fishery Industries Division, Department of Fisheries, FAO Rome, thanked the Government of Bangladesh on behalf of FAO, for hosting the meeting. The 8th Advisory Committee meeting was particularly important in view of SIDA's approval of a continuation of the project. He expressed his thanks to SIDA for continued support of the project and the hope that it would be continued beyond the presently approved date of funding. He noted that as a result of the last meeting of the FAO Committee on Fisheries in October 1983 small-scale fisheries figures prominently in the Action Programme to be considered by the World Fisheries Conference in 1984 and that the regional approach to fisheries development, including that of small-scale fisheries, had been endorsed in the Strategy on Fishery Management and Development also to be discussed at that conference. He emphasized the long-termnature of the development process, the importance of involving the rural people from the start of project activities, the role that needs to be played by local institutions and organisations and appreciated the high degree of involvement and commitment in the work of the project at government level.

6. Inaugurating the session, Mr. A. Z. M. Obaidullah Khan, Minister for Agriculture, Bangladesh, referred to the efforts being made by his country to develop and exploit the fisheries resources of the Bay of Bengal, expressed the hope that the momentum built up by the Bay of Bengal Programme would be sustained and strengthened in the future to bring about a lasting impact on the small-scale fisheries and assured his government's continued support and cooperation. He hoped that the deliberations at the meeting would be of assistance in formulating programmes for the benefit of the region's small-scale fishermen. He concluded by wishing the participants a comfortable stay in Bangladesh and success in their deliberations.

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7. A vote of thanks was proposed by Mr. A. Q. Chowdhury, Director of Fisheries, Bangladesh.

8. Following the proposal of Sri Lanka, seconded by India and Thailand, Mr. A. Q. Chowdhury was unanimously elected by the Committee as chairman of the meeting.

9. The Chairman thanked Mr. S. P. Jakhanwal, the outgoing chairman, for his conduct of the initial proceedings and the Committee for electing him chairman.

IO. A drafting committee comprising one representative from each participating country was appointed to facilitate the preparation of the report of the meeting.

11. The agenda was approved as proposed and is annexed as Appendix 2.

Progress Report

12. The Programme Director presented the Progress Report (Appendix 3) which set out the highlights of the activities carried out by the project during 1983 under the major subject matter areas.

13. The work programme for 1983 had been planned on the premise that SIDA was likely to expand its support beyond 1983.

14. The presentation of the Progress Report was preceded by an audio-visual on the scope and content of the work of the project. The discussions on each subject matter area were preceded by a brief summary by the Programme Director which was illustrated with slides. In addition *two* audio-visuals, one on the Ban Merbok aquaculture project, which had been prepared at the request of Malaysia for use as information material, and another on the theme "Small-Scale Fisheries: Development or Welfare ?" preceded the discussions in the areas of Coastal Aquaculture and Extension.

Fishing Gear and Methods

15. In reply to a question by India, the Programme Director stated that the intermediate technology net making machines acquired for net making in Chittagong had cost Indian Rs. 50,000 each to which approximately Rs. 15,000 had to be added for ancillary equipment-bobbin winders, stretching gear and boiling tubs. Although with these hand operated machines high quality nets were produced, the constraints to operation on a cottage industry scale mentioned in the progress report made the chances of these machines being viable on that scale a remote proposition.

16. In regard to the disappointing experience on Fish Aggregating Devices (FADs), India pointed out that the operation of FADs requires special conditions such as sheltered waters. It was possible that the small FADs used may have been unsuited to the exposed waters off Sri Lanka. In India a suitable environment for the use of FADs seems to exist in the waters of the Andaman and Nicobar Islands.

17. The Programme Director stated that as pointed out in his progress report some defects in construction had also contributed to the negative experience with FADs in Sri Lanka.

18. It was also brought to the notice of the Committee that the normal life-span of low cost FADs deployed in other parts of the world was short and rarely exceeded 4-6 months.

19. FAO informed the Committee that a world-wide survey on the utilization of FADs had been carried out by FAO. The report which would be published in 1984 should throw more light on questions of durability and economic viability.

20. Sri Lanka expressed continuing interest in FADs and supported the idea of continuing trials with low cost models anchored closer inshore.

21. On the subject of High-Opening Bottom Trawling, India stated that there was good scope for taking up this method of fishing on d commercial scale in many areas of India. A study of the economic viability of 5 boats over a period of about two years should be undertaken by the project so that a bankable project report could be made available to fishermen for the purpose of obtaining financing for investing in the new technology.

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Fishing Craft Technology

22. Malaysia stated that it was experiencing the same problem of high cost of wood for boat building that India was facing. Fibreglass was being considered as an alternative material but also seemed to be expensive and to involve problems of repair and maintenance.

23. The Programme Director stated that the costs of wood and fibreglass were similar at present in India but there was a high component of excise duty in the cost of fibreglass in India. In Sri Lanka where some duty concessions had been given on some materials it was cheaper than wood. The project had conducted a survey of boatbuilding materials in India some time ago and the data are presently being updated. As regards the repair and maintenance of fibreglass boats the technology is not complicated.

24. India expressed satisfaction at having been able to cooperate with the project in carrying out beachcraft trials in Tamil Nadu. Fibreglass seems to be a possible alternative boatbuilding material. A great deal of work however still remained to be done on aluminium. In fact the whole field of boat development is still felt to be in the research and development stage and could not be considered to have reached the stage of commercial production.

25. In response to a question from India the Programme Director stated that in regard to the beach winch the project had earlier tried out a manual winch but that the viable option seems to be a mechanical winch which could serve a large number of boats in a village, say 18-20, at a capital cost of about Rs. 18,000 and suggested that the government should try out the winch in some villages.

26. ODA expressed the hope that it could coordinate its own work in the development of beach landing craft with the work being done by the project in this area.

Coastal Aquaculture

27. Discussion on this subject matter area centered on the aquaculture projects in Thailand and Malaysia. In regard to the former it was noted that the project methodology had been to combine demonstration of new technology in cage culture with its extension to small-scale fisherfolk. The fisherfolk who participated in the project were required to invest part of their earnings from the cages provided at project expense in setting up additional cages. The fisherfolk had responded positively to this requirement and there had been substantial expansion of cage culture due to the setting up of additional cages by those participating in the project as well as by others who had copied the new technology. It was noted that the return on investment had been veryfavourable due to the relatively low capital investment and the high prices obtainable for the cultured seabass and grouper. On the other hand in pond culture with its high capital investment and the need for centralised management in respect of such matters as water control, the extension of technology would be more complicated.

28. In the Malaysia project the government's interest had been to test the technical feasibility of fish and shrimp culture in ponds. This objective had been successfully achieved and the government's policy was to leave the matter of determining commercial feasibility to the private sector.

29. Responding to the view expressed by some participants that the conduct of economic studies by the project was important for widespread application of the coastal aquaculture technologies being developed, the Programme Director stated that although complete economic evaluations had not yet been made, rough calculations of the cost and earnings in respect of the Satkhira project as also some data in respect of the Thailand project were available. Full details had been collected in respect of the Killai project.

30. Sri Lanka expressed the view that in some of the aquaculture projects as well as in some other activities it was turning out that the technologies developed were being found to be not quite appropriate for the small-scale sector with the result that there was a danger of the project goal of raising the quality of life of the small-scale fisherfolk not being fulfilled. Some participants were of the view that the ultimate objective had to be viewed in relation to differing fishery situations and priorities in each country. Each country had also its own definition of small-scale

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fisheries. There could be many situations where the project would not be able to assist the poorest of the poor — it could well be that in many cases the latter would be the last in the line of beneficiaries from the project's work. A change in this situation was perhaps beyond the competence of the project and would require extensive inputs from the government and private sectors in each country.

Extension Methodology

31. Sri Lanka felt that there was a tendency for the project to overconcentrate on technology development, to confine extension to small projects concerning women of the fishing communities which were also often related to income earning activities not connected with fishing. This seemed to show a lack of emphasis on the project goal of raising the quality of life of fisherfolk.

32. Responding to the statement by Sri Lanka, project staff stated that the income earning activities were unrelated to fishing due to the fact that in some places the women were not accustomed to engage in fishery-related activities with the result that other avenues had to be explored if women were to increase their incomes. Further, the project had so far not engaged in many projects combining technology and extension because of the lack of technology to be extended. With the completion of some technology development, a few projects have now been started.

33. Thailand expressed the view that the base of the aquaculture demonstration project rested more on the fisherfolk than on the fishery. The ultimate goal was to make the former better off — it was therefore valid to promote income earning activities for them even if they were unconnected with fishing. Malaysia concurred with this view.

34. SIDA stated that in its view too, primary attention should be accorded to the fisherfolk communities. It would appear that in some cases technology had tended to replace the fisherfolk community as the project base.

35. India pointed out that in the case of extension projects, the ultimate test was their replicability. It was difficult to obtain funding for extension projects on a saturation scale unlike for projects whose economic viability could be easily evaluated. The prospects of replicating such projects on a large scale were therefore not good due to resource constraints. It was felt that in those areas of India where the fish resources were not fully exploited higher priority should be accorded to technology development and projects to increase fisherfolk incomes by application of technology rather than to extension projects.

36. Bangladesh referred to the progress made in the Fisherwomen Activities project in Chittagong of which one of the main achievements was the development of self-confidence by the fisherwomen and stated that the expansion of this methodology would be likely to form part of the government's third five-year plan in the shape of project proposals.

37. Diverse views were expressed by participants in reaction to the audio-visual on "Small-Scale Fisheries: Development or Welfare ?" The Programme Director stated that while each country had the right to determine its fishery policies the purpose of the audio-visual was to provoke thought and discussion on various aspects of development policies which appear to be contradictory and consequently counterproductive.

Information Service

38. Sri Lanka expressed its satisfaction with the excellent quality of the work turned out by the Information Service and ODA complimented the project on the level of performance achieved.

Project Inputs

39. The Programme Director drew the attention of the Committee to the detailed information given in regard to project inputs in Tables 2-5 of the Progress Report.

40. SIDA informed the Committee of its intention to provide the services of three Associate Experts during the next few years.

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Other BOBP Projects

41. The Programme Director in presenting this agenda item explained to the Committee that while the Advisory Committee is the monitoring mechanism of the SIDA-funded small-scale fisheries project, the monitoring mechanism of the UNDP-funded project for Fishery Resources Management in the Bay of Bengal (RAS/81/051) is the BOBC. Since, however,this project is integrated with the former, a report on its activities was being placed before the Committee as an information document.

42. The Senior Fishery Biologist of RAS/81/051, in presenting the report, explained the purpose of the project which had primarily become necessary as a result of the declaration of exclusive economic zones. The project sought to involve its activities in the fishery systems of the member countries. The priorities for activities had been identified with special reference to stocks shared or likely to be shared and these would be used as the nucleus of the project objective of setting up a mechanism for management measures. The approach was to directly involve, in the activities, scientists of the member countries through whom the requirements for management could be communicated to the administrative and political decision making levels. One important outcome expected was to correct the imbalances that presently exist in the region in the collection of statistics and stock assessment and to achieve an even level for the region. In addition to support by FAO and UNDP, the close involvement of and participation by the member countries was obviously most important for the achievement of project objectives. The project had established contact with ICLARM and the Danish Research Institute and would also work in close liaison with national projects handling relevant activities.

43. In the discussion that followed, Malaysia stated that work done by the working group meeting at Penang on the Mackerels of the Malacca Strait had been very useful to the 3 countries participating in the meeting. India referred to paras 65 and 66 of the BOBC meeting held at Covelong in 1983 and stated that its participation in the Technical Liaison Officers meeting held in Madras was subject to clearance of the proposal for participation in the project by the Government of India, which is still awaited. As delay in this regard may adversely affect other member countries, the Programme Director stressed the need to expedite the decision.

44. In regard to the proposed ODA regional project for assistance in post-harvest technology ODA confirmed its full commitment to the implementation of the project on Fish Utilization which had been described by the ODA representative at the 7th Advisory Committee. Due to procedural and administrative delays formal agreements for the implementation of the project had not yet been signed, but ODA expected that as discussions were well advanced and as there were no disagreements on the proposal, implementation should begin soon after the target date of April 1, 1984.

45. ODA confirmed that the project would be formally administered and operated by the U.K. and that separate financial arrangements outside the present BOBP funding would be made, with the exception that it was hoped BOBP would share office accommodation.

46. The ODA experts would work closely with BOBP staff and would report to both ODA and BOBP. The project would be monitored and evaluated by ODA in accordance with its own procedures, but it would also report to and be reviewed by the BOBC as in the case of other activities under the BOBP.

47. ODA expects to use the experience of this project to help in the identification and formulation of other regional and bilateral fisheries projects in the Bay of Bengal, which could be considered for ODA support.

48. ODA stressed that flexibility and cooperation would be needed in the early stages of this project, but that it could well form a model for further U.K. involvement with BOBP.

Work Programme 1984/85

49. In presenting the Work Programme for 1984/85 (attached as Appendix 4) the Programme Director stated that although planning had been done on the basis of the funding committed for 1½ years there now seemed to be a strong probability that funds would be available for a

further 1½ years. Since of the 34 activities listed, 24 were proposed for continuation upto mid 1985, their continuation beyond that date could be handled smoothly provided a commitment for further funding was available in time for the 9th AC meeting early 1985. The funds were allocated between the different subject matter areas roughly in the proportion of 30% for Aquaculture, 25% for Extension, 18% for Fishing Gear and Methods, 18% for Fishing Craft Technology and 9% for Information. This included a contingency of 10%, part of which could **be** used for ad hoc matters that might come up during the year, He stressed that the proposals would involve full utilisation of the amount available and that any new activities could be taken up only by discontinuing some existing activity.

50. The listed items of the Work Programme were thereafter considered item-wise and agreed to by the Committee.

51. In regard to Coastal Aquaculture, Thailand expressed its wish to continue the coastal aquaculture project parallel with national programmes and Malaysia its wish to initiate a project in the area of cockle culture management if further funding was forthcoming. India requested that the services of national/regional experts in the field of brackishwater aquaculture be made available and that this matter should **be** given priority.

52. In the area of Extension, India expressed its wish for assistance in preparing a saturation project for application of the results of the Women Extension Training project in Tamil Nadu.

53. In the area of Fishing Gear and Methods, Sri Lanka requested extension of the termination date of the High-Opening Bottom Trawling project, up to mid 1985. India requested that in addition to the Sri Lanka project on Fish Aggregating Devices, a new project should also be initiated off the coasts of Tamil Nadu and Andhra Pradesh in collaboration with the Fishery Survey of India. Bangladesh requested that the experiments on bottom-set longlining at Cox's Bazaar which had been taken up in 1981-82 be resumed.

54. In the area of Fishing Craft, India was of the view that Beachcraft Development in India should be concerned not only with demonstration but also with design, materials and testing. Further continuing work on these aspects, among others, was essential to fulfil India's needs in the field of fishing craft technology and this activity should not therefore be phased out. Continuance on this basis implied continuance in the locations where the activities were on-going at present in addition to working in a new location in Sri Lanka.

55. Sri Lanka stated that in its view the arrangement referred to in para 7 of the document on the Work Programme should remain unchanged.

56. SIDA noted that the greatest emphasis in the Work Programme was on aquaculture which in turn was mainly concerned with culture of shrimp which was an export product rather than one which catered to the protein requirements of the rural sector. Some participants pointed out that protein-rich food could equally well be purchased with the increased rural incomes generated by exporting the cultured shrimp or by getting a high price for cultured fish such as seabass and grouper.

57. ICLARM suggested that in view of the concentration on shrimp culture, the undertaking of a detailed economic analysis might be helpful. It was also advisable to proceed with caution in regard to backyard hatcheries as some technical problems seem to arise when hatcheries are operated on this scale.

BOBP Beyond 1985

58. The future of the Programme on a long-term basis was discussed by the Committee with reference to the document prepared by the Secretariat and attached as Appendix 5.

59. With funds committed for only 1½ years for the existing project, though with the possibility that funding for a further period of 1½ years would be forthcoming, the Committee felt that it was urgently necessary **to** intensify the efforts to enlist support from agencies other than SIDA **to** enable the delivery of needed future assistance for the region.

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60. The Programme Director suggested that the member countries might give an indication of their priorities in relation to the project modules outlined in the Secretariat's document and that the agencies present also indicate the funding possibilities on their side.

61. The member countries felt that it was difficult to give definite indications without prior clearance with their governments but agreed that a preliminary indication was feasible. The priorities indicated were as follows:

Fishing Technology —	Bangladesh, India and Sri Lanka
Coastal Aquaculture	All countries
Extension Training	India, Malaysia and Thailand
Fishery Resources	Malaysia and Thailand
Development Support —	India
Fish Utilisation —	India, Malaysia, Sri Lanka and Thailand

DANIDA and NORAD expressed their interest in supporting the Programme in the future. They considered that the Programme was effective and that its activities were well in accord with their own interest in regard to fisheries development. They however informed the Committee that they were unable to make any commitments at this stage but would pursue the question of participation and its modalities with their respective headquarters.

62. Bangladesh suggested that in the event of funding being provided by DANIDA and or NORAD such funding should be over and above the allocation for their respective country programmes.

63. FAO informed the Committee that the Netherlands Government has requested information in regard to financial support, the projects to be implemented, the continuation and magnitude of Swedish involvement and indicated that project proposals of a limited scale will be considered with interest by that government.

64. The representative of UNDP Dhaka expressed his strong support for the small-scale fisheries project and satisfaction at the results achieved. His office was willing to assist in obtaining regional funding for a future programme and would forward its views to UNDP headquarters.

65. ODA stated that many of the projects sketched out were of interest to ODA and hoped that the governments would consider approaching ODA for discussions on possible cooperation.

66. A lively discussion ensued on the modalities for further action at this stage. The Committee recommended that a working group including representatives of all the member countries of BOBC should be established to formulate concrete proposals for a regional Programme relevant to subject matter areas in accordance with the verified priorities of the member countries. The meeting of the working group should be preceded by preparation of the proposals by one or two consultants preferably from the region who would consult, as appropriate, with member governments and potential donor agencies. The working group should complete its work within a period of about 6 months during 1984 and the proposals should be sent thereafter to member governments for consideration with a view to finalisation at the 9th Advisory Committee meeting. Details of the modalities proposed to be followed should be provided to the member countries by the Secretariat at the time of asking for nominations to the working group.

67. FAO informed the Committee that the costs of the working group and consultants could probably be funded by FAO. SIDA also offered to support the consultancies.

Other Matters

68. Sri Lanka suggested that a socio-economic survey be carried out in the region to assess the present situation of the quality of life, which could serve as a bench-mark against which the impact of the Programme could be assessed in due course.

Next Meeting

69. The Committee accepted with appreciation the invitation extended by Thailand to hold its ninth meeting in January 1985 in Thailand on dates to be later decided.

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Field Seminar

70. A one-day field visit was made to the village of Juldia-Shamipur near Chittagong to examine the pilot project for improvement of the living conditions of fisherwomen and their families. This project which falls under the small-scale fisheries project's extension activities was selected for a field visit to acquaint the Committee with a project based on an integrated development approach towards creating incomes for women in fishery-related fields such as credit for marketing of fish, fish farming and net making, as well as other fields such as animal husbandry and fruit gardening and also to improve non-formal education and sanitation.

71. The participants in the field visit observed the living conditions (housing, environment) and self-employment patterns of small-scale fisherfolk. They discussed the activities started among the fisherwomen to improve their incomes, environment and education with field supervisors and village level workers. Two link workers gave a brief explanation of the project activities and underlined the positive impact of the activities with regard to increased incomes from net making and fish marketing. Some participants felt that the project was a viable one and that this type of project should be encouraged. Others felt that though it was a very worthwhile activity the question of who should take up such activities depends on relative priorities and economic analysis.

72. Information was provided by project staff and a representative of the Kalidaha Fishing Project run by a Catholic mission on the manually operated net making machines tested by the project which were available for inspection during the visit.

73. In the late afternoon a visit was also paid to the Bangladesh Fisheries Development Corporation premises in Chittagong. The Manager of the BFDC together with DANIDA advisers and representatives briefed the participants on the various activities of the boatbuilding yard (set up by DANIDA in 1977), the fish harbour, workshop for trawlers and motorized boats, other shore facilities and the marine fisheries academy.

Adoption of Report

74. The above report was adopted by the Committee.

Concluding Remarks

75. At the concluding session, following the adoption of the report of the meeting, Mr. A. H. A. Jalil, on behalf of Bangladesh, expressed appreciation of the preparations made by the secretariat for the meeting, the useful and productive discussions that had taken place and the efficient conduct of the meeting by the chairman.

76. The delegates of India, Malaysia, Sri Lanka and Thailand expressed their appreciation of the arrangements for the meeting and gratitude for the warm welcome and the hospitality extended by the Government of Bangladesh.

77. On behalf of FAO, Mr. M. Doeff thanked the Government of Bangladesh for the excellent arrangements, facilities and hospitality, expressed gratitude to SIDA for the funding provided and the assurance of further support and to the observers from the various agencies for their contribution to the discussions at the meeting.

78. On behalf of SIDA, Mr. L. Augustinson thanked the Government of Bangladesh for hosting the meeting and expressed appreciation of the useful discussions that had taken place.

79. The chairman, in adjourning the meeting, thanked the participants for their cooperation and wished them a safe journey back home.

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Appendix 1

BAY OF BENGAL PROGRAMME — AC8/3 (Rev. 1)

Development of Small-Scale Fisheries — (GCP/RAS/040/SWE)

8th Advisory Committee Meeting. 16-19 January 1984, Dhaka, Bangladesh

LIST OF PARTICIPANTS

Bangladesh

Mr. A. Q. Chowdhury	Director of Fisheries Fisheries and Livestock Division Ministry of Agriculture
Mr. A. H. A. Jalil	Assistant Director of Fisheries
Mr. Md. Shahidullah	Deputy Director of Fisheries Marine Fisheries Department
Mr. Ataur Rahim	Deputy Director of Fisheries Khulna Division

India

Mr. S. P. Jakhanwal	Joint Secretary (FY Et T) Ministry of Agriculture, New Delhi
Mr. K. M. Joseph	Director Fishery Survey of India
Mr. S. Subramani	Chairman TNFDC and Secretary of Fisheries Government of Tamil Nadu

Ma/a ysia

Mr. Shahrom Abd Majid	Deputy Director General Fisheries Department
Ms. Badariah Mohd Ali	Fisheries Officer (International) Fisheries Department

Sri Lanka

Mr. S. Wewelwela	Director, Development Ministry of Fisheries
Mr. B. W. Perera	Project Adviser Ministry of Fisheries

Thailand

Mr. Pairoj Brohmanonda	Director, Brackishwater Fisheries Division Department of Fisheries
Mr. W. Kachornsak	Economist, Fisheries Economic Section Department of Fisheries

SIDA

Mr. Lars Augustinson	Deputy Head of Division Agriculture Division
Mr. A. Andreasson	Head of Section National Board of Fisheries
Mr. K. Blom	Head of Section Agriculture Division
Mr. L. Bondesson	First Secretary (Development Cooperation) Dhaka

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FAO

Dr. W. Krone	Director Fishery Industry Division Department of Fisheries, Rome
Mr. M. Doeff	Project Operations Officer Department of Fisheries, Rome
Mr. T. White	Team Leader (BGD/80/025) Chittagong

Observers

ADB

Mr. Bhanuphol Horayangura	Senior Programme Officer Bangladesh

DANIDA

Mr. H. Preuthun	Counsellor, Cooperation, Dhaka
Ms. S. Esbjorn	Asst. Head of Section Ministry of Foreign Affairs, Denmark

ICLARM

Dr. Richard A. Neal	Director General, Manila

NORAD

Mr. O. A. Lunder	Head of Fisheries Division Norway

ODA (UK)

Mr. J. Stoneman	Fishery Adviser

UNDP

Mr. N. Ringrose	Deputy Resident Representative, Dhaka
Ms. D. Kabell	Programme Officer, Dhaka

BOBP (RAS/81/051)

Dr. K. Sivasubramaniam	Sr. Fishery Biologist Colombo

BOBP (GCP/RAS/040/SWE)

Ms. N. Patchanee	Sociologist, Madras
Ms. E. Drewes	Socio-Economist, Madras

Secretariat (BOBP)

Mr. L. O. Engvall	Programme Director, Madras
Mr. V. L. C. Pietersz	Sr. Development Adviser, Madras
Mr. A. Kashem	Project Officer, Bangladesh
Ms. S. Scurville	Sr. Secretary, Madras

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Appendix 2

8th Advisory Committee Meeting, 16-19 January 1984, Dhaka, Bangladesh

ANNOTATED AGENDA

1. Opening of the Meeting

2. Election of Chairman

3. Adoption of the Agenda

4. Progress Report – 1983

The report on work carried out by the Project in 1983 is presented in document AC8/6. The highlights, **by** subject matter, are:

Fishing Gear and Methods: Extensive fishing trials with new types of gear in the set bagnet (behundi) fishery in Bangladesh. Encouraging trials of high-opening bottom trawls and disappointing trials with Fish Aggregating Devices (FAD) in Sri Lanka.

Fishing Craft Technology: The development of two types of beach landing craft was finalised as was that of beach hauling devices. Initial results of motorization of country craft in India were positive. A consultation on sail power in small-scale fisheries was conducted in cooperation with the FAO Regular Programme.

Coastal Aquaculture: Satisfactory completion of the Ban Merbok project and interesting start of seaweed culture in Malysia. Continued positive production results from the Killai pen culture project. Initial culture trials at Polekurru, Andhra Pradesh and Satkhira, Bangladesh with mixed results.

Extension Services: Curriculum development for non-formal education of fisherfolk in Tamil Nadu and Orissa. Good progress with activities for fisherwomen in Bangladesh and the pilot credit scheme in Orissa. Social feasibility studies of projects for beachlanding craft and for shrimp farming at Killai and Satkhira.

Information Service: Preparation and publishing of "General Description" of small-scale fisheries in participating countries. Production of two audio-visuals.

Since it was known early in the year that SIDA was likely to extend its support beyond 1983 the work programme was planned accordingly. However, as a result of exchange fluctuations the budget was reduced by about US $ 400,000 from the anticipated level of US $ 2 million. The remaining funds have been exhausted.

Five new associate experts (two each from the Netherlands and Norway and one from Sweden) joined the project during the year and one more (Netherlands) is under recruitment.

5. Other BOBP Projects

The FAO/UNDP project for Fishery Resources Management in the Bay of Bengal (RAS/81/051) became operational in 1983. In a meeting with technical liaison officers from the participating countries the final touch was given to the project document and priorities for the work were established. The main thrust will be given to five working groups for shared stocks, namely:

(i) Tuna shared by Maldives, Sri Lanka, India.

(ii) Fisheries of Palk Bay and Gulf of Mannar (Sri Lanka, India).

(iii) Hilsa and prawns of upper Bay of Bengal (India, Bangladesh) : A review of the hilsa fishery has been nearly completed and the first meeting of the working group is scheduled for April/May 1984.

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(iv) Tuna resources of the Andaman Sea (India, Thailand, Indonesia).

(v) Resources of the Malacca Strait (Thailand, Malaysia, Indonesia) : A first meeting of a working group for the pelagic species was held in December 1983.

This project shares management and administrative services with the SIDA-funded project. There is already considerable technical cross-fertilisation between the two projects. The latest progress report (October-December) is given in document AC8/7.

A project for in-service training in fishery biology and statistics in the Maldives was conducted by BOBP utilising expertise from GCP/RAS/040/SWE and RAS/81/051.

An ODA (UK) regional project for assistance in post-harvest technology has been under consideration, the idea being that it would work in parallel with the FAO-executed programme.

The Committee may wish to comment on these projects and particularly on their relationship with GCP/RAS/040/SWE.

6. Work Programme – 1984/85

The Project has been extended by 1½ years i.e. till mid 1985 by the provision of additional funds from SIDA of the order of US $2 million. Since an extension of three years was earlier envisaged the approach and work programme contained in the request for extension will have to be modified. The main criteria are: (a) No new activities will be taken up. (b) Those activities which have reached a reasonable degree of self sufficiency will be terminated as soon as possible. (c) Those requiring continued attention will be operated at full strength through 1984 and phased out during the first six months of 1985. (d) Somefunds will be reserved for the second half of 1985 for final reporting and winding up work. Details are given in document AC8/8.

7. BOBP beyond 1985

With funds assured at present only for 1½years the long-term continuance of the GCP/RAS/040/SWE project and the BOBP in its present form is in doubt. It is understood though (ref 2nd BOBC session) that SIDA might be interested in providing further support beyond that date. Other agencies have also expressed interest in supporting the Programme.

It is therefore proposed that the Programme is reformulated for a new phase to commence mid-1985 to continue some of the ongoing work and to tackle new problem areas. The main features would be:

(a) The Programme should be built up of projects (modules) of which one or more could be funded by different agencies (UNDP is funding the “resources management” project unit the end of 1986).

(b) Each project would have its own specific purpose defined in a project document. Overall direction and administrative services would be shared between the FAO-executed projects.

(c) The three major functions of the Programme would be to (i) develop technology and methodology (ii) impart training to fisheries personnel and (iii) provide advisory services. (In the present set-up most of the effort is devoted to the first function.)

(d) All member countries of the BOBC should be invited to participate in the entire Programme.

(e) The need for long-term assistance must be recognised and the duration of most projects should be several rather than a couple of years.

The Committee’s views on conceptual and material issues are of crucial importance for further preparation of a continued BOBP. Further thoughts to stimulate the discussion are developed in document AC8/9.

8. Other matters

9. Next Meeting

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Following the principle of holding the meetings in the participating countries on a rotational basis the turn has come to Thailand for the 9th Advisory Committee meeting.

In the second session of the BOBC it was suggested that the third session should, if possible, be held in conjunction with the 9th Advisory Committee meeting of GCP/RAS/040/SWE.

10. Field Seminar on Extension

One of the family (women) oriented extension activities operated by the Project is located at the Juldia village near Chittagong. Some 110 women, organised in groups, are engaged in netmaking, rearing of fish, goats and ducks, cultivation of fruit and vegetables and group actions including the improvement of hygiene and sanitation in the village. A visit will be paid to the village to see the various activities, meet the women concerned, and hold a discussion on the major issues of this type of work.

11. Adoption of the Report

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Appendix 3

BAY OF BENGAL PROGRAMME AC8/ 6

Development of Small-Scale Fisheries (GCP/RAS/040/SWE)

8th Advisory Committee Meeting, 16-19 January 1984, Dhaka, Bangladesh

PROGRESS REPORT-1983

Introduction

1. The report that follows summarizes and comments on the major activities in which the Project was engaged during 1983. Details and minor activities are described in the quarterly progress reports, the *Bay of Bengal News* and in technical and working papers.

2. 1983 was the last year of the Project according to the original design. But even at the 7th Advisory Committee meeting there were clear indications that SIDA would in one form or another continue to provide financial support for some more time; a three-year extension was envisaged. The work during the year was therefore not geared for termination but continuation without expansion pending the outcome of the request for extension. Some activities were also scaled down and phased out. Only one new substantial activity was taken up, Seaweed Culture in Malaysia, and one other, High-Opening Bottom Trawling, was extended to Sri Lanka.

3. A reduction of work was also necessitated by sudden budget restrictions that came to light in the first quarter. These were caused by the gradual change that had taken place in the relative values of the Swedish Kronor and the US Dollar and by the devaluation of the former in 1982.

4. The progress has by and large been as anticipated; there have been no significant setbacks, But some delays have been experienced, notably in boatbuilding activities, caused largely by external factors beyond the Project's direct control. The preparation of reports and working papers is still lagging behind.

5. The most significant impact of the Project's work continues to be in fish and shellfish farming in Thailand and in trawling with high-opening trawls in India and Sri Lanka. High potential impact is still envisaged from nearly all aquaculture work, beachcraft development and many of the extension activities.

6. The project has together with the UNDP-funded project for Marine Fishery Resources Management (RAS/81/051) constituted the Bay of Bengal Programme. Management and administrative services have been shared between the two projects on a *pro rata* basis.

7. Besides the engagements in project work described below, minor tasks were performed on a reimbursable basis for other projects : (i) conduct of an in-service training programme in Fishery Biology and Statistics in the Maldives funded by FAO/TCP (ii) assistance toanFAO/TCP project in India for experiments with propeller nozzles on small trawlers (iii) advisory services in connection with formulation of a NORAD-funded small-scale fisheries project for Balasore district, Orissa and (iv) elaboration of the proposal for issue of long tail engines in Bangladesh under UNCDF.

Fishing Gear and Methods

8. The effort put into activities dealing with Fishing Gear and Methods has been less than in previous years. The Fishing Technologist post remained vacant until October. The output has therefore also been less spectacular but satisfactory progress is noted for some activities implemented with the assistance of consultants and an associate expert and with the cooperation of counterpart agencies.

9. fine and net haulers (BOB/LNH) : The prototype line hauler tested in the previous year did not come into use by the fishermen. The reason might have been too little demonstration which was supposed to be undertaken by the cooperating agency in Sri Lanka. Towards the end of the year however it was employed in a new longline fishery for oil shark in deep waters

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(300-400 m depth). It proved to be very useful, facilitating the gear handling considerably. This might mean a revival of the activity for the coming year.

10. Cottage industry net-making (BOB/Cl N) : Two machines were acquired in 1982 and set up in Chittagong, Bangladesh, in cooperation with the Caritas -supported Kalidaha Fishing Project. It took about eight months to overcome various installation problems before establishing satisfactory quality and regular commercial production.

Four machine operators and two bobbin winders working in two shifts were employed during the commercial production test; all of them were women. These trials led to the conclusion that the hand-operated machines can produce a high-quality product and that the operation is commercially viable. In fact, a comparative study of braiding by hand, by manually operated machine and by automatic machine revealed that the intermediate technology is the most economic for 4 inch mesh webbing using 6 ply twine of 210 denier. The hand-operated machines therefore seem to be an attractive alternative for a large portion of the net requirements of Bangladesh. Other advantages of the machines are that they employ more people, don't require electricity, can be installed in relatively simple premises.

But the picture is not entirely bright. Since manual operations are involved all through the fabrication process — braiding, boiling of webbing, stretching, lacing pieces together, mending — strict supervision is required. The machines are simple but sensitive and need continuous monitoring and adjustment. To produce nets of good quality on a commercial basis good management is required. Further, the production is fairly high and sufficient twine needs to be stocked for full capacity utilization; this will require capital. And the sales are of a magnitude that calls for organised marketing.

All these factors unfortunately exclude most village-level situations. Small entrepreneurs or cooperatives may not be able to manage the net-making units; one would have to look for larger entrepreneurs. The original objective of encouraging a net-making cottage industry might not therefore be attained. However, the machines do have many attractive features, and a second phase of trials in cooperation with an importer or trader of nets and twine is being planned.

Other development agencies such as DANIDA, Ford Foundation and the national Grameen Bank have expressed interest in the technology.

11. Bottom Set Longlining (BGD/BSL) : An attempt was initiated in 1982 to survey the longline fishery in the Cox's Bazaar area and to improve it by introducing better hooks and lines and rigging of the gear. Some trials were undertaken in 1983 but the overall implementation of the activity leaves a lot to be desired and the results are believed to be of little or no value.

12. Large Mesh Driftnets (BGD/LMD) : Trials with nets of thinner twine were conducted from Chittagong for the fourth and last season -which finished in March. They confirmed earlier findings that the new nets are cheaper and catch more fish than the common nets of thicker twine, while being equally durable. All the fishermen associated with the trials seem to be convinced about the superiority of the new nets. So also some importers of twine, who have said they will start importing the thinner varieties. The material is however not yet readily available in the open market. The import procedures may be one reason. The demand too may not be strong enough. The Project's experience is that there are no problems in marketing such nets. Some two hundred of them have just been sold from the stock manufactured by hand by women under another activity reported below under Extension Methodology (BGD/FWA). In terminating the work it is believed that the idea of using lighter twine has been firmly planted but it is difficult to predict a time frame for its grow-out.

13. Set bagnets (BGD/SBN) : This activity concerns a major fishery in Bangladesh which is second only to the driftnet fishery and is therefore of high importance. The work started in 1980. Some of the traditional behundi nets were then made out of cheaper polyethylene (PE) material instead of the usual nylon. Fishermen from Bangladesh also went on study tours to observe a Bombay fishery — similar but believed to be more advanced -to learn about possible improvements of their own fishery. As a result, one of the study tour members constructed a new net based on the design he observed in Bombay. The new net was tested together with the traditional nets during the 1982/83 season.

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The trials encountered a number of problems including bad weather and large quantities of jelly fish which obstructed the fishing operation. At the end of the season however the fishermen and Project staff were sufficiently convinced that the new nets named 'Dhol' nets have a higher catching capacity and that it would be worthwhile continuing the trials. During the 1982/83 season problems were also encountered in collecting reliable data from the different nets. It was therefore decided that for the next season (1983/84) two complete units, one of behundi nets and one of dhol nets, would operate in the same area for easy comparison. This required not only new nets but also new craft to operate the dhol nets. Therefore, two new motorized boats were locally constructed in Cox's Bazar. They are of local basic design but modified to better accommodate the new dhol nets. Three key fishermen of the dhol net unit went to Bombay to learn the techniques.

The fishing trials started in September 1983 by setting out the nets. The fishing results varied a lot during the first weeks. Then, in November a severe cyclone hit the area, boats were damaged and one of the dhol nets was lost. Less severe cyclone weather which hit the area later further hampered the fishing trials.

The data available at the time of reporting indicates that the dhol nets are nearly 100 per cent more efficient than the traditional behundi nets in terms of production. The disadvantages are that the nets are slightly more expensive (not significantly so) and that they are more sensitive to adverse weather conditions and more complicated to operate. The trials will continued till the end of the season (February 1984).

A survey of the entire Bangladesh set bagnet fishery has been completed during the year but the data and information collected were not yet analysed at the end of the reporting period.

The progress of this activity has been slower than anticipated before the work started, due mainly to the hazards of weather with frequent cyclones and the very primitive conditions in the remote area in which the trials are conducted.

With regard to the PE material for net construction it appears that fishermen are ready to use it. The problem is that the material is not readily available in Bangladesh. The process of manufacturing PE twine is fairly simple and thought has been given to the formulation of a separate project funded by other sources to install a pilot plant for production of polyethylene twine.

14. High Opening Bottom Trawling (IND/HBT) and (SRL/HBT): The introduction of high opening bottom trawls in India was more or less completed at the end of the previous year. The work has continued to generate impact and is one of the most successful activities of the Project. The effort early 1983 was devoted to winding up the work in the main centres in southern Tamil Nadu. Assistance was also provided to CIFNET which has taken up the work of further dissemination in India. Trawls were manufactured and supplied to CIFNET for introduction and demonstration in the State of Gujarat. It was learnt that the initial trials were very successful and that the method is gaining acceptance and spreading fast. A large number of requests for assistance in introducing the method have been received during the year. They have come from public organisations, cooperatives, private fishing companies and individual fishermen in several states of India. One of them was from Orissa which was a result of the training provided to fishermen and fisheries inspectors in 1982 in Mandapam and Rameswaram. All the requests have been forwarded to CIFNET since the Project's direct involvement has been terminated.

On a request from Sri Lanka, similar work was taken up in the district of Mannar in May/June 1983. The initial work was guided by two TCDC consultants from Tamil Nadu who had been associated with the work in India. The trials resulted in almost immediate success and are still ongoing at the end of the reporting period. The trawl nets have been continuously modified and improved to fit the small boats (28 ft.) and the low engine power (35 hp) commonly used in that area. Requests have also been received from various parties in Sri Lanka to assist them in employing high-opening bottom trawls. This work is in progress at the end of the reporting period and is planned to be terminated within the first six months of 1984.

Despite the success of these activities it has been debated whether they fall within the terms of reference of the present Project, The results have certainly benefited a large number of fishermen but perhaps not the traditional fishing communities. At one time there was a fear that the work

would have an adverse effect on the traditional fishermen but so far there is no evidence to this effect. To thoroughly investigate this matter the FAO Regular Programme has provided some additional funds for a study of the impact of high-opening bottom trawling; this was initiated at the very end of the year. The apparent impact was reflected in *Bay of Bengal News, No. 9.*

15. Demersal Fishing (SRL/DEF) : Extensive fishing trials in the previous years established that bottom set longlining could **be** a viable off-season fishery at certain locations. During this year fishing trials have been monitored from a location south of Colombo where the results have been very satisfactory. Assistance has been provided to the fishermen in obtaining hooks and lines and in rigging their gear. At the completion of this work in April-May it was agreed that the experience gained during the trials would be transferred to the Training Division of the Ministry of Fisheries to be used in their training and extension work at various locations in Sri Lanka; very little of this work has unfortunately been done.

The comprehensive review of the demersal stocks and the demersal fisheries completed early in the year indicates that there might have been some overoptimism about the potential for exploitation of demersal resources. The review concludes that there is scope for increased production but little hope for great commercial successes. The catch rates attained during the Project's fishing trials are probably representative of what one can expect to achieve. It is also evident that the demersal fishery will only be economically viable at certain locations at certain times of the year. Further details are given in an article in *Bay of Bengal News, No. 10.*

The Project's work has been completed and although there has not been any spectacular commercial success, it is believed that the information gathered during the fishing trials and through the review is of great value to planners and project implementors in the future.

16. Fish Aggregating Devices (SRL/FAD) : Six FAD's of the oceanic type were anchored in relatively shallow waters (60 to 100 metres) 4 to 10 miles from the coast along the west and southwest coast of Sri Lanka in late 1982 and early 1983. The original intention was to put them in deeper waters but suitable anchoring places were 25 miles or further from the coast, and considered too far for most of the small-scale fishermen. The FADs started to attract different types of fish such as bait fish, rainbow runners, dolphin fish and mackerel shortly after the deployment. But there were never any heavy concentrations and the FADs did not attract any of the larger pelagic species like Tuna and Spanish Mackerel.

The most serious setback of the trials was the high mortality rate of the FADs themselves. One of them disappeared shortly after it had been deployed, two others vanished after a few months and by October 1983 all the FADs had disappeared. Two of them drifted ashore and were recovered. This made possible an examination of the chains and ropes, and it became clear that there were a couple of very weak links in the construction which might have been the main reason for their short life.

Because of the disappointing results no further FADs were constructed as planned. A reassessment is needed. Since the FADs did not aggregate the large pelagic species, since they may interfere with the driftnet fishery and since most of them would have to be located in areas of heavy merchant ship traffic or in waters inaccessible to the small-scale fishermen, this type of FAD might not be a feasible proposition in Sri Lanka. To try out near-shore aggregating FADs of low cost, a second experiment was launched at the end of the year.

Fishing Craft Technology

17. As in previous years, the major effort has been devoted to the development of beachlanding craft. Other important areas in which progress has been noted concern sail power, motorization of country craft and development of outrigger craft. Project work in this discipline has also been carried out for the boat component of the set bagnet (BGD/SBN) activity in Bangladesh, reported above under Fishing Gear and Methods.

18. Development of beachlanding craft (BOB/BCD) : The work has concentrated on consolidation, elaboration and demonstration of what was produced earlier. There has not been any significant change in the technical approach. The boatyard at Madras which was closed at the end of last year was reopened in February and has since been used by the Project, greatly facilitating the craft development work.

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The interest in beachlanding craft in India is steadily growing. The Government of Andhra Pradesh has sanctioned a scheme for large-scale introduction; in Tamil Nadu a new scheme (initially for 5 boats) has been approved for further demonstration in addition to the subsidy scheme for 30 boats in Injambakkam. The response in Sri Lanka has been cooler. It is in fact a little disappointing that the SRL-11 type has not yet been considered for any of the Government-sponsored schemes.

At the end of 1983 there are three different types of beachlanding craft which have been tested over longer periods in commercial fishing and have gained acceptance:

(a) The buoyancy block craft (IND-21) which is an improved version of the original IND-11. This proved to be a very popular boat in Tamil Nadu. A problem encountered during the year is the rapid cost increase of good quality timber which is essential to withstand the rough handling and operation of the boats. It seems that it might be better not to pursue the wooden construction.

(b) The second type of craft which has reached its final stage of development is IND-20A. The original was IND-13 and the final product is similar to the two models IND-18 and IND-20. The boats have been accepted in Tamil Nadu villages and seem to operate well from new trial sites in Andhra Pradesh.

(c) The third type is the SRL-11 which was the first prototype of this design and is now operating commercially on its third year from Negombo, Sri Lanka. The SRL-14, which is the final design of this type, has been moulded in FRP and the first hull is under construction. An intermediate model, SRL-12,which isverysimilarto SRL-14, is still undergoing trials in Sri Lanka. Two SRL-12 boats are equipped with an engine with very high gear reduction and the purpose is to prove their suitability for trawling. Because of the lack of a good trawl design and several problems with boats, gear and operation, these trials have not yet been conclusive as far as trawling is concerned.

A fourth category of boats comprises the IND-23 and IND-24 made out of aluminium, and a new type IND-25, which will be made of fibreglass. These boats are smaller than IND-20A and they might be regarded as the smallest motorized beachlanding craft that will be technically feasible. The IND-23 and IND-24 models have proved to be technically feasible as far as the design is concerned, but problems have been encountered with the aluminium material. A manufacturer of aluminium has undertaken to send, free of cost, a new supply of material and a third craft will be manufactured and tested. It is expected that one of these three craft — IND-23, 24 or 25 -will emerge as a suitable small beachlanding craft which might also replace the IND-21 if the latter becomes no longer feasible.

The cost of beachlanding craft has gone up considerably during the development work and the smallest boat will cost about Rs. 50,000 without fishing gear. This means that the opportunities for introduction of craft are perhaps fewer than envisaged in the early days of the Project It is essential that, where the boats are introduced, the right type of quantity of fishing gear is supplied with the boat. The experience is that in places where larger boats have been operating before, like the Navas, the beachlanding craft have also operated economically, while in villages where the traditional fishing is only conducted by kattumarams and small-mesh driftnets, the boats have not been economical.

During the trials, many problems big and small have been encountered in allocating the boats to the villagers. In order to learn more about these problems and find ways to solve them, the project's extension sociologists have been active -outlining a suitable methodology and monitoring the progress. Very good results were attained by auctioning the boats for a charter of three months. In the fishing village concerned very lively bidding took place and the monthly charter fee that the successful bidder was prepared to pay was about five times higher than the Project expected before the auctioning started. It is also very encouraging that the successful bidder managed to make good use of the boat; in the first month he had gross earnings seven times higher than the monthly charter fee — Rs. 12,000 against Rs. 1,600 (see Bay of Bengal News, No. 10).

The pivoting engine installation has now reached a final developed stage. The overheating remains a bit of a problem -the engines have therefore been slightly de-rated and seem to work satisfactorily.

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Beach-hauling devices are also an integral part of the beachcraft development work. The winch finalised last year has been in operation at two locations in India during the whole year and they work well. Also, the inflatable plastic fenders used as rollers are functioning. A problem seems to be the longevity of the rollers; they have a tendency to start leaking and cracking after a relatively short time. The matter is still under observation. One set of winch and rollers has been shipped to Sri Lanka and will be introduced and used in connection with the operations of SRL-11 and later of SRL-14. A description of this system figured in *Bay of Bengal News, No. 9.*

19. An activity to test sailing-cum-rowing-cum-motorized boats which started in Kerala under the FAO/UNDP Project RAS/77/044 was terminated during the year. The fishermen participating in the trials acquired the boats at a depreciated price. The conclusions were that the conditions for sailing are notfavourable during a sufficiently long period of the year to justify the design of a sailing boat and that more emphasis should be put on the rowing quality of the boat. It also became clear that motorization by an outboard engine did not increase the net earnings of the fishing units; it just covered the extra costs. Further work on this type of craft is required since it is becoming increasingly difficult and expensive to obtain timber for constructing the traditional craft used by the fishermen. Assistance was therefore given to the Government of Kerala to prepare a project which has been submitted to FAO for TCP funding.

20. Sail Improvement (BOB/SAL) : The major findings during 1982 i.e. that the use of sails may not be as easily accepted by fishermen as originally believed, have been confirmed during the work this year. An interesting example is in Sri Lanka where the project supplied a new sail of good quality for an ORU fisherman to try out. He very quickly rejected the sail with the argument that it was too air-tight and too dangerous to use in strong winds; he preferred a sail with loose texture which in weak winds could be wetted to make it more airtight.

The major work during the year focussed on the sail power consultation which was held in Madras and co-sponsored by the FAO Regular Programme. Seven rigs were manufactured for the sailing tests. These sails were tested on two identical IND-20A boats constructed in time for the consultation. The sail area was about 27 sq.m. Elimination trials were arranged and the Gunter rig turned out to be the winner. The rig was very efficient and, combined with the low cost and the easy handling, was everyone's favourite. As a follow-up, a Gunter sail has been made for a Nava in Andhra Pradesh on request from a fisherman participating in the consultation. Gunter sails have also been prepared for all the IND-20A boats in operation in Andhra Pradesh and Tamil Nadu. The manufacturing of the sails was made possible by the establishment of a sail loft at the Royapuram boatyard equipped with new sewing equipment. Articles about the sail consultation appeared in the *Bay of Bengal News, No. 12.*

21. Motorization of Country Craft (IND/MCC) : A 43 ft. long vallam of local design was constructed at Adirampattinam in southern Tamil Nadu and equipped with an engine installation of the pivoting type used on the beachlanding craft. These craft have to traverse a very shallow canal on coming into land and a conventional engine installation would not be technically feasible. After some initial reluctance the fishermen gradually started fishing trials and obtained good results. During four months of trials, the motorized vallam caught about twice as much fish as the non-motorized craft and saved a few hours every day in steaming time. The cost of fuel has only been 5% of the gross revenue. During cyclonic weather late in December, when Adirampattinam received 40 cm of rain in one day, the boat sank in the canal and was buried in mud. Details of damages are not known at the time of preparing this report.

22. Fishing Boat Development (SRL/FBD) : The fuel-saving recommendations made last year — about cleaning of hulls to remove fouling, change of propeller and de-rating of engines — have not been followed up to the extent that one would have wished.

The testing and demonstration of the 34-footer equipped with a 22 hp engine (against 33 hp in 28 footers), insulated fish hold and shelter for the crew has continued during the year. The gross earnings during 1983 were in the order of Rs. 200,000 which is considered to be satisfactory. But one would have liked to see the 34-footer concentrate a little more on two-day trips to save fuel and use the insulated fish hold to take more advantage of the design of the boat.

The plug for SRL-15, which is a harbour-based version of SRL-14, was nearly complete.

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23. ORU replacement (SRL/ORU) : The good performance of two large FRP Orus tested during 1982 led to a pilot project for introduction of six boats of this type under a subsidy/credit scheme. The Project undertook to pay 50% subsidy and the Bank of Ceylon undertook to give a credit for 45%, requiring 5% cash payment by the beneficiary. Four boats were completed and the selection of beneficiaries was made at the very end of the reporting period.

In order to explore the possibilities of using this type of craft for large-mesh driftnetting further offshore, a new 40 ft. Oru of fibreglass was built and tested. It is designed for high sailing performance and is equipped with a Deutz 6 hp engine using the long tail principle. The boat was completed at Madras, tested and shipped to Sri Lanka for commercial trials.

A new 26 ft. outrigger canoe was constructed in plywood as a prototype. The man propulsion will be sail, but the boat will also be equipped with an outboard engine. The idea behind this craft is **to** provide an alternative to the medium-size Oru and also possibly to the 18-footers.

The Trimaran, made up of a 7-metre fibreglass hull and two light outriggers, has been under test for the last **two** years without any visible breakthrough. It is felt at the end of the reporting period that the craft is too small and unsuitable for fishing in the sea except during very fair weather and that the fishery in which it can be engaged will not produce sufficient earnings to pay the costs.

Coastal Aquaculture

24. During the reporting period aquaculture activities have caught up with the wishes of the participating countries and become the largest of the Project's main areas of work. Major activities have been in progress in all the countries except Sri Lanka. An activity was prepared for a small shrimp hatchery and pen culture in Sri Lanka but could not be started because of budgetary constraints and the uncertainty about funding support beyond 1983.

25. Satkhira Aquaculture Project (BGD/SAP) : At the beginning of the year the aquaculture pond complex at Satkhira — consisting of ten 1 hectare ponds, a catch basin and an 8 hectare agro-aquaculture field, plus a lab building -was completed.

The farming trials eventually started in February after some minor deficiencies in the construction had been attended to. The ten ponds were then stocked with *Penaeus monodon,* and the catch basin and the agro-aquaculture field were naturally stocked through the inlet of water to the farm. The initial growth of the shrimp was observed to be very good but by harvest time in June, it was found that the survival rate and growth rate were much below expectations. The harvest was therefore postponed and periodically carried out till the end of October. The total yield from the ten ponds was about 1 tonne of shrimp and 400 kg of edible fish plus whatever could be caught in the catch basin which is still to be drained. The yield was below expectations but there are several good reasons for the poor outcome. The water management was insufficient because of the use of temporary wooden sluices which did not function well and did not have the capacity for effective exchange of water. A fungal disease was observed in July, which might have been caused by the poor water management. It is suspected that some poaching was going on before a proper watch system was established. The late stocking is another reason for the low yield. Finally, the removal of topsoil in the whole pond area during construction is not beneficial for fish farming during the initial period.

Towards the end of the monsoon when the water became almost fresh (0 salinity), the agro-aquaculture field was stocked with fresh water shrimp *Macrobrachium rosenbergii.* Good growth has been observed but harvesting had not been done at the end of the year.

In order to study the possibilities of combining shrimp culture with paddy cultivation, a small area in the agro-aquaculture field was reserved for a salt-resistant type of paddy. The first harvest produced a yield of 380 kg/ha.

The farm dykes, canals, etc. have been continuously repaired and maintained; some of the dykes suffered badly from wave action and a couple of experimental sluice gates in two ponds were found inadequate and will have to be changed. It was also found during the first year of culture that there was a heavy siltation in the catch basin. So it was decided to reduce the catch

basin area considerably and only provide a canal from the main sluice gates, which would form a T-shaped canal with the arms feeding the ponds. This work was started at the end of the year and expected to be completed early 1984 before the second culture season starting in February.

Parallel with the technical culture work, a socio-economic study has been initiated in order to investigate the social problems of large-scale adoption of intensive shrimp culture practices in the area, and the likely implications of such development on the fishing communities.

On the whole, the first year of farming produced less than anticipated but, considering all the problems mentioned above, the performance was satisfactory. The project has received a lot of attention in Bangladesh, both from the national authorities and international agencies assisting Bangladesh in its development. The Satkhira farm was featured in *Bay of Bengal News, No. 12.*

26. Polekurru Aquaculture Project (IND/AAP) : A small five ha pond farm designed in the previous year was completed. It consists of four tidal-fed ponds of different configurations and one pond which is to be pump-fed. The entire construction was carried out under the super-vision of an engineer of the Fisheries Department and the actual work was done by utilizing local material and workers. Because of the inexperience of the carpenters and other skilled workers and the poor quality of the material used, problems were encountered in the construction of the slucice gates.

The complex was more or less ready by August and stocking took place between August and October. Some problems were encountered in obtaining sufficient quantity of seed. This was partly due to fresh water flooding in the area but also because of the lack of organised seed prospecting efforts. The growth observed until the end of the year appears to be satisfactory and harvest is planned for early January. One severe problem seems to be predation of the shrimp by foxes, otters and birds. But to what extent this might affect the farming yield is not known.

27. Killai Pen Culture Project (IND/TAP) : The culture trials at Killai started in 1982 in a small ¼ ha farm. The first harvest produced a very good result — about 600 kg/ha of mainly *P. monodon.* The second trial produced almost as good a yield (550 kg/ha) mainly of *P. indicus* (there were problems in obtaining *P. monodon* seeds at the time of stocking). After completion of the second cycle two new pens each 0.5 ha were constructed. The webbing used up to that time had a mesh size of 14 mm. In order to experiment with smaller mesh, two 1000 m^2 pens with 10 mm mesh and a small experimental pen of 15 x 15 m with only 8 mm mesh, were erected.

The third culture cycle, which ended in summer, produced a yield of mainly *P. indicus* which was only about half of the two first ones, i.e. 310 kg/ha. It was observed that in the pens with smaller mesh size, the yield was slightly higher and in the experimental pen of 8 mm mesh it was as high as 450 kg/ha. The lower yield in the large 0.5 ha pens is attributed to inadequate removal of predators before and during the culture trials. Another reason is the extreme water temperature (35") and the high salinity (42 ppt).

The cutting of nets by crabs continued to be a problem but is now under better control with the various experimental materials of split hard bamboo, chicken wire and thick polyethylene twine.

The fourth cycle started early autumn. Partial harvesting has been done, but it will not be finalised until early 1984. In late December the area was hit by cyclonic weather with large quantities of rain. It is not known to what extent these abnormal conditions will affect the yield of the fourth cycle. The Killai project was presented in *Bay of Bengal News, No. 10.*

Supplementary to the technical trials, a feasibility study was initiated, which concentrated on the organisation and social problems for wider development of pen culture in the area. The study has concluded that the culture is technically and economically feasible. The total area in which this type of culture would be technically feasible is estimated at about 85 ha. The study has also concluded that there would not be any serious problems in obtaining seed and feed for this farm area and that the seed required for the pen culture would not affect the capture fishery in the Killai backwaters.

Several problems of social nature are foreseen. Two different communities are the potential farmers. Their social status varies widely, and it is important that any organisational practices

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for commercial culture take into account the existing relationship between the two communities. In order to test the commercial viability further, a scheme for simulated commercial trials under different organisational forms is being planned.

28. Coastal Aquaculture, Malaysia (MAL/CAC) : The Ban Merbok fish-cum-shrimp culture project was completed during the year and the activity terminated. At the close all the ponds had been prepared for culture and stocked with seabass *(Lates calcarifer)* and shrimp (P. monodon and *P.* merguiensis) ; the culture cycle had been completed only in two shrimp ponds which produced a yield of 500-600 kg/ha. A batch of farmers were trained during the period. The main problem encountered in getting the ponds operational was the high acid content of the soil. All ponds had to be repeatedly ploughed, submerged, washed and drained and limed. Problems of heavy oxidation and high salinity were also encountered during the trials. At the time of completion of the project the Government was satisfied with the performance of the farm and was considering its lease to private parties for further operation.

A draft final report on this activity has been prepared and will be issued in due course. On request from the Department of Fisheries, an audio-visual has also been prepared. The Ban Merbok Project was featured in *Bay of Bengal News, No. '11.*

The last activity under this heading was the sponsoring of a study tour to Japan to study artificial spawning of cockle. This was prompted by the serious problem of scarcity of cockle seed, experienced in recent years.

29. Seaweed Culture, Malaysia (MAL/SWC) : An experimental project for farming of the seaweed *Gracilaria cylindrica* was taken up early in the year. It has resulted in the setting up of a 100 m^2 pilot farm in the Middle Bank between the mainland and Penang island. The seaweed is grown on raffia lines stretched between stakes about 5 metres apart. Good growth has been observed and the first harvest is scheduled for January 1984. Some trials of pond culture of seaweed at the Ban Merbok pond complex were conducted. These trials have up to now not produced any significant results.

The establishment of the Middle Bank pilot farm was preceded by several basic studies and experiments. These included the identification of suitable substrata for spore seeding, identification of sites for trials, experiments with spore discharge, treatment of seed stock, spore settlement, viability and growth under different conditions and water qualities, and fieid testing of the most promising substrata. A couple of other *Gracilaria* species available in the area have also been subjected to gel analysis but the results have not yet been reported.

The project has reached the stage of expansion to commercial trials at other sites, and proposals for such trials have been prepared for starting in 1984. Further information about the seaweed project can be found in *Bay of Bengal News,* No. 12.

30. Aquaculture Demonstration (THA/ACD) : This activity has continued to show extremely good progress and is perhaps the most successful activity of *the* Project. The number of cages for seabass *(Lates calcarifer)* and the ectuarine grouper (Epinephelus tauvina) in the entire project area is now over 1200. A rapid expansion has been noted in the provinces of Satul, Trang and Krabi. In the Phang Nga province, however, the number of cages has reduced in accordance with the supply of available feed. Many cf the families that have taken up this technique are earning good money and it is encouraging to note that most of them also, at the time of harvesting, reinvest their money in additional cages. In one area private farmers have obtained credit from the agricultural bank to construct cages and purchase fingerlings and feed. In two villages enthusiasm was very high and in each the villagers cooperated in constructing a community hall-cum-watch hut.

In a few villages failures have also occurred of high mortality with consequently low income for the farmers. The main reasons seem to be insufficient care particularly in nursing of the small fry and irregular feeding. In order to improve the crucial nursing practices a new approach of establishing the practice of commercial nursery farms was started in the middle cf the year and demonstrations have been given to the farmers about the necessary care that has to be observed in the early stages of the culture. It is estimated that the production of cultured seabass and grouper in the entire project area as a result of the Project's work is about 375 tonne/year, worth the equivalent of about US $ 1.15 million.

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Cockle culture also continues to expand in the Phang Nga and Satul areas. In Phang Nga, the area under cultivation was about 300 ha at the end of the year. Because of the difficulties in obtaining cockle seed (usually from Malaysia) further expansion of culture is not encouraged by the Project.

The culture of oyster, which during several years did not show any sign of growth, has taken root in the Phang Nga area and the number of oyster rafts is steadily increasing.

The only area in which inadequate technical progress has been made is in mussel culture. The modus operandi during the last couple of years has been to transplant mussel seed brought from the Gulf of Thailand to Phang Nga to build up a brood stock to generate spat. A large number of spat luring poles, and an Indonesian type 'butterfly collector'have been tried but the concentration of spat has been inadequate. The reason seems to be that there is too much water movement in the area where the culture trials have been carried out resulting in disposal of the spats over too large an area. The Department intends to undertake some basic experiments along similar lines but in more protected waters. Even without the creation of a new stock of mussel, culture appears to be feasible by purchasing seed from the Gulf of Thailand and confining the culture in Phang Nga Bay tc grow-out for harvest and marketing.

In the Satul and Trang Provinces, the Project has assisted women groups to start supplementary income-earning activities, such as cockle culture, cage culture and processing of fishery products. Because of the success of the Project, the Department of Fisheries is keen to continue the Project and also expand it to the two remaining coastal provinces, Ranong and Phuket, thereby covering the entire west coast.

Extension Methodology

31. The work carried out during the year has in essence been a continuation of the activities started in previous years. They concern training of extension staff at different levels and pilot activities in fishing villages with emphasis on income-generating occupations for fisherwomen. There has been an increased effort in developing models for non-formal education as a means to further social development among fisherfolk. There were also social feasibility studies on introduction of new technology in the areas of beachlanding craft and aquaculture (already reported under the respective subjects).

32. Fisherwomen Activities (BGD/FWA) : At 1982 end, 75 women organised in 5 groups participated in the activity: there are now 120 women organised in 10 groups. The hand-braiding of large-mesh driftnets of 27 to 30 ply has continued to be the major income-earning activity. Some 250 nets at a total market value of nearly $ 25,000 had been completed by the end of the year. In the absence of any positive response from net importers and traders to establishing a working relationship with the women, the Project assisted in providing twine and in the marketing of the nets. The voluntary saving of 10% of their earnings was increased to 15% and the accumulated savings amounted to Taka 12,000 at the end of the year.

Other activities have also been taken up. Two fish ponds have been stocked with carp by two women groups and fish growth is carefully monitored with assistance from the Fisheries Department. Goat rearing has been taken up by 12 women, poultry farming by 16 women, and loans for fish marketing extended to about 40 fisherwomen. The repayment record has been very good.

One of the village leaders has donated a 500 m^2 plot of land on which a small community hall will be erected. The hall has been designed for holding meetings and for conducting training, it will also be used for child care and other activities of interest to the women.

Expansion of this type of activity to other fishing villages in Chittagong district has been considered. It was felt however that it would be prudent to absorb the lessons from the pilot village before venturing out to other villages. The ultimate usefulness of the pilot project will of course be determined by the extent to which the approach is replicable in other villages. One of the problems here is the heavy long-term input required to get the idea of group action accepted, the women motivated and the group activities organised. The present work in Juldia village should therefore continue for some more time before any expansion is undertaken.

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33. Women Extension Training in Tamil Nadu (IND/WET) : The work under this heading carried out in the previous year was training of women link workers from fishing villages in Chingleput District and short-term training of extension staff. The main work during the reporting year consisted of assistance and support to the Fisherwomen Extension Service (FWES) of the Fisheries Directorate. A training course was ccnducted for staff of the service and a study tour conducted to Karnataka to study women cooperatives, their organisation and management. A proposal submitted to the Directorate for expansion of the FWES was eventually not adopted for budgetary reasons.

The link workers trained in the previous year have received direct support and backstopping through the FWES in registering cooperative societies, and in contact with other government bodies concerning infrastructure and welfare facilities, non-formal education programmes, land acquisition, institutional credits, savings and primary schools. The project also funded the building of community halls in four of the villages. Satisfactory progress has been noted in the provision of credit; hundreds of loans at 4% interest have been granted. A primary school has been set up in one of the villages and the link workers have been successful in generating savings among the fisherwomen. See also Bay of Bengal News, No. 11.

A one-year observation study of factors which determine the role and status of women in fishing villages has been conducted and a report is under preparation at the end of the year.

The activity as a whole has shown good progress; some tangible improvements have been achieved and the Directorate has gained valuable experience in this type of work. But as in the case of Bangladesh, large-scale impact will depend on its replicability. The main problem is the amount of effort needed which was illustrated in connection with the proposal for expansion of the FWES.

34. Non-Forma/ Adult Education (IND/NFE) : This is a follow-up of the Coastal Village Development activity in Adirampattinam during which it was found that non-formal education programmes might be a way of reaching the fisherfolk and in the long run achieving social improvement. Four NFE groups with 15 to 20 participants each were set up in Adirampattinam to test the development of a suitable curriculum. A curriculum and training material have been developed in workshops attended by experts in education, social work and fisheries in Tamil Nadu. By the end of the year the basic curriculum, an animators' guide, a literacy component and 20 easy-to-read leaflets out of 100 planned have been completed.

The entire development package is monitored by a panel of national education experts to ensure that the material developed is in conformity with national standards and guidelines and that the final model can be easily modified for application in other states. Tamil Nadu authorities have shown a great interest in this work, and a definite desire to implement the education programme on its completion has been expressed. The work will be completed by the end of 1984. See also Bay of Bengal News, Nos. 10 and 12.

35. Extension Training in Orissa (IND/XOR) : The in-service training scheme launched in 1982, which consists of three major modules -credit, community development and fishing technology-has been more or less completed during the year. The third module was concluded with a residential training course in fishing gear and methods at CIFNET in Cochin, and the participation of extension officers in the introduction of beachlanding craft and associated fishing trials. In retrospect it is felt that the duration of the initial training courses was perhaps too short to produce the expected output. However, the in-service training activities following on the training courses compensated for that deficiency. Two major pilot projects emerged during the training progranimes-credit and non-formal primary education. These are being implemented with the active participation of the extension officers.

The main features of the credit project are decentralised identification of credit needs, direct finance to individuals without subsidy and the financing of diversified items and activities. The objective is not to supply boats and nets to non-owners but to establish direct links between fishermen and banks by initially strengthening existing fishing units, so that they improve catches and earnings and generate additional employment. Other credit needs, now being met by moneylenders and traders -such as repair and replacement of equipment, marketing and ancillary activities -are also being catered to.

The fishery extension officers have taken active part in the credit programme — in identifying the needs of the fisherfolk, selecting the households, identifying bank branches, reviewing and processing loan applications and negotiating with banks. Every step has been reviewed in meetings with bank experts and Project staff. Banks in several villages began to issue loans and the immediate experience including repayment was very positive. Discussions were recently taken up with bankers about the possibilities of simplifying repayment procedures and also about establishing a closer relationship between bank officials and the fisherfolk. It is planned to feature the credit scheme in Bay of Bengal News No. 13, March 1984.

The second major pilot project triggered off by the training scheme is a non-formal primary education programme for 30 schools. A curriculum for a two-year period (to fit in with the state programme) is under development. Teaching material is being prepared by national consultants and is periodically reviewed in discussions with teachers and other educationists. The project will assist in providing some material and equipment for the schools, while the SCERT (State Council for Educational Research and Training) will provide funds under a UNICEF programme for the printing of school books.

The third valuable outcome of the in-service training scheme is a ccmprehensive socio-cultural study of Orissa fisherfolk. interim results of **the** study have been used in the development **of the** non-formal education material and were also presented at an international conference in Calcutta on "Man and Environment".

36. Women Income Earning (SRL/WOM) : The three centres for manufacture of coir products, lace-making and tailoring and sewing reached a satisfactory level of self-sufficiency during the year. Assistance has been provided to improve the design and quality of the product and the management of the centres. The women engaged have been very responsive. Besides advisory services, the project has provided funds for establishing the centres in permanent premises. The centre for coir products is assisted by the Ministry of Fisheries and the Ministry of Rural Industrial Development, while the two other centres are monitored by the Lanka Mahila Samiti, a voluntary women's organisation.

Information Service

37. During the year the Information Service continued to provide effective support to BOBP's activities.

38. The quarterly newsletter, Bay of Bengal News, completed its third year. Requests for the newsletter, from within and outside the region, have expanded its mailing list to 1,600. Average size has also increased (to 28 pages per issue, from 23 in 1982 and 21 in 1981). Preparation and production of a quality newsletter is time-consuming, but it is definitely the most effective way of disseminating project ideas, information and findings simultaneously to a variety of widely dispersed audiences.

39. As for technical papers, one report, three working papers and three information documents were out during the year (see Table 1). There is still a backlog of technical papers under different stages of production and special measures are required to catch up. The "information documents" are revised, updated and printed versions of the popular "general description" series initiated under the preparatory phase of the project, which summarizes basic factual and statistical data of small-scale fisheries in the region. These papers have been valuable as reference documents to a variety of users. New versions of India, Andhra Pradesh and Tamil Nadu are out while those for Sri Lanka, Bangladesh, Orissa, West Bengal and the Andamans are under printing and preparation.

40. Three *audio-visuals* were produced during the year: one was a 15-minute production on **the** impact of project activities; another focussed on the theme"Small-Scale Fisheries: Development or Welfare ?" and was shown by the Project Manager at a conference in Singapore; and a third was on the Ban Merbok aquaculture demonstration project. The audio-visuals, produced entirely by project staff with only studio help for technical hardware, have been very effective.

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Table 1

1983- Publications (GCP/RAS/040/SWE)

Reports		
BOBP/REP/16	—	Report of the Seventh Meeting of the Advisory Committee. New Delhi, India, January 17-21, 1983. Madras, India, March 1983.
Working Papers		
BOBP/WP/21	—	Improved Deck Machinery and Layout for Small Coastal Trawlers. G. Pajot, J. Crockett, S. Pandurangan and P. V. Ramamoorthy. Madras, India, June 1983.
BOBP/WP/22	—	The Impact of Management Training on the Performance of Marketing Officers in State Fisheries Corporations. U. Tietze, Madras, India, June 1983.
BOBP/WP/23	—	Review of Experiences with and Present Knowledge about Fish Aggregating Devices — Magnus Bergstrom, Madras, India, November 1983.
Information Documents		
BOBP/INF/3	—	Marine Small-Scale Fisheries of India : A General Description. Madras, India, March 1983.
BOBP/INF/4	—	Marine Small-Scale Fisheries of Andhra Pradesh : A General Description. Madras, India, June 1983.
BOBP/INF/5	—	Marine Small-Scale Fisheries of Tamil Nadu : A General Description. Madras, India, December 1983.
Newsletters		
March July September December	—	Bay of Bengal News

41. Media coverage of the project was good considering the fact that the project did not strive for it during the period, the only exception being a press conference held on the occasion of the October sail consultation. Fishing News International did some stories on project activities on the basis of Bay of Bengal News articles/reports, while several stories appeared in Indian and Sri Lankan newspapers. The biggest splash was made by high-opening bottom trawling. At least 30 newspapers all over India gave prominent play to a PTl story on high-opening bottom prawling in Rameswaram, following a PTI reporter's visit there.

42. The Library continued to render useful service to project staff and professionals outside BOBP.

The Project has been prepared to render assistance to national institutions in preparing information material for their own use. The response to this idea discussed in the 7th AC meeting has however been poor. Only one request was recently received; it will be met early in 1984.

Project Inputs

43. At the time of the 7th Advisory Committee meeting early in the year it was envisaged that about US $ 2 million would be available for 1983. But as a result of the exchange fluctuations referred to above, the actual amount available was less and after it was fully utilized, the total outlay is likely to exceed the budget by about $70,000. A breakdown of the expenditures under major budget headings is given in Table 2. Of the total outlay about 36% is in respect of Aquaculture, Fishing Craft accounts for 26%, Extension for 19%, Fishing Gear and Methods for 12% and Information for 7%.

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Table 2

1983 — Budget and Expenditures — GCP/RAS/040/SWE (In U.S. $)

Code	Object of Expenditure	Expenditure 1976/1982	Budget 1983	Expenditure up to 31-10-1983	Estimated Expenditure up to 31-12-1983	Estimated US $ balance 31-12-1983
10	Personnel services	2,345,454	693,000	524,719	631,283	61,717
20	Duty travel	541,684	150,000	139,326	159,572	(9,572)
30	Contractual services	436,893	253,669	228,834	283,535	(29,866)
40	General operating expenses	295,586	80,000	54,108	63,685	16,315
50	Supplies and materials	567,552	110,000	214,458	236,045	(126,045)
60	Equipment	289,905	70,000	41,701	42,681	27,319
80	Fellowships,grants & contributions	265,340	50,000	36,626	51,583	(1,583)
	Sub-total	4,742,414	1,406,669	1,239,772	1,468,384	(61,715)
90	Project servicing cost	647,492	182,867	161,170	190,890	(8,023)
	Grand Total	5389,906	1,589,536	1,400,942	1,659,274	(69,738)

44. There have been no major professional staff changes. The Fishing Technology post remained vacant till October and was then refilled by the same incumbent who served earlier *on* the project. Details of the staffing are given in Table 3.

45. The Project has been considerably strengthened by the addition of five new associate experts -from Netherlands (2), Norway (2) and Sweden (1). One other (from Netherlands) is under recruitment. See Table 3.

46. Because of the reduced budget, short-term consultants have been used to a lesser extent than in previous years. The major input has been for aquaculture in Malaysia and Bangladesh and for fishing activities in Bangladesh. Table 4 provides the details.

47. The major portion of expenditure under "Duty Travel" refers to travel by international expert staff. As in previous years they have travelled extensively, on an average a little over 100 days with a high of 164 days and a low of 63. Some travel by associate experts has also been charged to this component whenever their extra budgetary allowances have been insufficient. It also includes the costs of occasional travel by counterpart representatives e.g. the Advisory Committee meeting and other non-staff travel in connection with implementation of activities (Table 2.

48. The major expenditures for contractual services have been incurred in connection with aquaculture activities in Bangladesh, India (Andhra Pradesh) and Malysia (seaweed) ; boat-building ; extension ; and the information service (printing). A large number of national professional consultants have been hired on contract basis directly or through their organisations for varying periods. In total some 24 persons have been engaged. most of them in connection with extension activities in India.

49. Materials and supplies have been primarily acquired for aquaculture, bcatbuilding, fishing and for office use. The actual expenditures have far exceeded the budget. The reason is that

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large quantities of material for construction of fish farms in Bangladesh and India were purchased; originally, they were to be covered under contracts. (The latter budget was severely reduced in the latest budget cut after finalisation of the work programme.)

Table 3

1983 — Professional Staff — GCP/RAS/040/SWE

S.No.	Post	Name of incumbent	(Nationality)	Date of (month/year) Arr.	Dep.
International Staff[1]					
1.	Programme Director	Engvall, L O	(Sweden)	11/78	
2.	Sr. Development Adviser	Pietersz, V L C	(Sri Lanka)	1/79	
3.	Sr. Fishing Technologist[2]	Pajot, G	(France)	10/83	
4.	Fishing Craft Engineer	Overa, A	(Norway)	9/80	
5.	Naval Architect	Ravikumar, R	(India)	9/79	
6.	Aquaculturist	Karim, M	(Bangladesh)	1/82	
7.	Sociologist (Women Officer)	Patchanee (Ms) N	(Thailand)	8/80	
8.	Socio-Economist[3]	Drewes (Ms) E	(Germany FR)	10/80	
9.	Economist"	Tietze, U	(Germany FR)	10/80	
10.	Information Officer[4]	Madhu, S R	(India)	10/79	
11.	Fishing Technologist (Ass. Expert)	Akerman, S E	(Sweden)	1/83	
12.	Marine Engineer (Ass. Expert)	Hemminghyth, P A	(Norway)	7/83	
13.	Naval Architect (Ass. Expert)	Johansen, S O	(Norway)	8/83	
14.	Aquaculturist (Ass. Expert)	Janssen, J A	(Netherlands)	10/83	
15.	Sociologist (Ass. Expert)	Dorresteijn, H	(Netherlands)	11/83	
National Staff					
16.	Administrative Officer	Sivaraman, N	(India)	4/79	10/83
17.	Project Officer — Bangladesh	Kashem, A	(Bangladesh)	11/79	
18.	Project Officer — Thailand	Tejakomol, D	(Thailand)	5/82	

(1) Staff with GCP/RAS/040/SWE.

(2) The same incumbent occupied this post from 1/79 to 5/82

(3) Associate experts until 10/82.

(4) National officer until 12/82.

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Table 4

1983 — Consultants — GCP/RAS/040/SWE

S.No. Name	Nationality	Project	M/M
(a) International Consultants			
1. A. K. Rasul	Indonesia	MAL/CAC	9.50
2. T. Gestsson	Iceland	BGD/FGM	6.00
3. A. N. Ghosh	India	BGD/CAC	5.50
4. J. McKillop	UK	BOB/FCT	1.50
5. 0. Gulbrandsen	Norway	BOB/FCT	1.00
6. C. Peters	USA	SRL/FGM	0.75
7. P. Katanuwong	Thailand	BOB/FGM	0.75
(b) TCDC Consultants			
1. P. V. Ramamoorthy	India	SRL/FGM	3.00
2. S. Pandurangan	India	SRL/FGM	3.00

50. The major equipment components acquired have been marine engines for beachlanding and other craft and project vehicles.

51. The training activities have, as in the previous years, been extensive. The total training output amounts to nearly 900 man-weeks i.e. about 17 man-years. Most of the effort has been devoted to training at the lower levels. Details are given in Table 5.

52. With very few exceptions, the counterpart input in terms of staff has been satisfactory. Other inputs vary a great deal with type of activity but they have not generally been a constraint in implementing the work programme. Since there has not been any need for a large capital counterpart input for fish farms, fishing trials, etc. the major inputs under this head are those for office and boatyard facilities in Madras.

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Table 5

1983 -Training Activities — GCP/RAS/040/SWE

S.No.	Subject	Duration 1 (weeks)	Venue	Number of Participants				
				BGD	IND	MAL	SRL	THA
1.	***Consultations/Seminars/ Workshops***							
1.1	Consultation to evaluate sailing rigs and their application on small fishing craft (in cooperationwith FAO Regular Programme)	***1***	Madras	**1**	4	1	1	1
1.2	Workshops on material development for NFE curriculum for fisherfolk	3x1	Madras		8			
1.3	Consultation on NFE curriculum for fish&folk	1	Madras	2	10			
1.4	Workshop on socio-cultural survey of marine fishing communities in Orissa	½	Orissa		10			
1.5	Seminar on non-formal primary education in fishing villages..	***1***	Bhubaneswar		18			
1.6	Seminar on inclusion of small-scale marine fisheries in short-term and term lending at coastal bank branches	***1***	Bhubaneswar		55			
1.7	Workshop on methods of determining capital cost of fishing gear for purpose of scheme preparation	½	Cuttack		15			
2.	***Training Courses***							
2.1	Engine maintenance and repair for boat operators and fishery inspectors	2x1	Bangalore		4			
2.2	Sail-making for workers	6	Madras		3			
2.3	Pond farming of shrimp and fish for fish farmers . . .	2	Ban Merbok (MAL)			6		
2.4	Fish cage culture for fish farmers	½	Krabi (THA)					20
2.5	Project planning and management for rural development for field workers and fishery inspectors	2	Dhaka	12				
2.6	Fish pond management for field workers (women) . .	1	Dhaka	4				
2.7	Leadership/preventive health care training for women voluntary leaders	***1***	Chittagong	18				
2.8	Institutional credit for fisherwomen	***1***	Madras		43			
2.9	Management of cooperative societies for fisherwomen committee members	***1***	Madras		26			

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S.No.	Subject	Duration (weeks)	Venue	Number of Participants				
				BGD	IND	MAL	SRL	THA
2.10	Principles of extension and communication for fisheries inspectors working with fisherwomen extension service..	1	Madras		17			
2.11	Fishing gear and methods for extension officers	2½	Cochin		15			
2.12	Handicraft for women	4	Mirissa, Kudawella (SRL)				30	
2.13	Refresher training for fishery inspectors	8	Sri Lanka				24	
2.14	Training in fish utilisation and fish products for local government officers	½	Satul (THA)					26
2.15	Making of fish products for fisherwomen	4 x ½	Phang Nga (THA)					26
2.16	Training in mending and making clothes for fisherwomen	3	Ba Kan Koei (THA)					20
2.17	Cage culture for fisherwomen	½	Trang (THA)					10
3.	*Study Tours*							
3.1	Beachcraft development for fishermen	6	Madras				1	
3.2	Oru development for fishermen	6	Madras				2	
3.3	Fibreglass boat construction for boatbuilders	13	Madras		3			
3.4	Set bagnet fishery for fishermen	2	Bombay	5				
3.5	Brackishwater shrimp farming for counterpart officers	1	West Bengal	2				
3.6	Coastal aquaculture activities in India for counterpart officers.	2	India	2				
3.7	Wooden sluices and water control structures in shrimp farms for counterpart engineer in Andhra Pradesh	1	West Bengal		1			
3.8	Aquaculture activities in Andhra Pradesh for officer from Tamil Nadu	1	India		1			
3.9	Artificial spawning of cockle for a scientist	2	Japan			1		
3.10	Private oyster farms for fish farmers	½	Surat Thani (THA)					10
3.11	Coastal fisherwomen cooperative societies in Karnataka for extension officers in Tamil Nadu	1	Karnataka		8			
3.12	Fisherwomen Extension Service for a Fishery Officer	1	Bangladesh		1			

'Courses or other gatherings shorter than 3 days (half week) have not been included. If there are several courses under one heading, e.g. 1.2, the number of participants given is the average in one course.

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Appendix 4

BAY OF BENGAL PROGRAMME AC8/8

Development of Small-Scale Fisheries (GCP/RAS/040/SWE)

8th Advisory Committee Meeting, 16-19 January 7984, Dhaka, Bangladesh

WORK PROGRAMME 1984/85

1. The funding agency (SIDA) has granted an extension of the Project for 1½ years till the middle of 1985 by making available additional funds in an amount of Swedish Kronor 16.25 millions which is equivalent to about US $ 2 million.

2. Although it is hoped that there will be a continuation of support to BOBP from SIDA **and** other agencies beyond mid 1985 the work programme will have to be planned with a mid-l 985 cut-off date for activities. If further support is forthcoming the programme can be adjusted at the 9th Advisory Committee Meeting which is expected **to** take place early in 1985.

3. To facilitate a smooth continuation beyond 1985 the work programme is designed so that activities considered to require further attention beyond mid-1985 will be continued till the next Advisory Committee meeting. They will then be phased **out** during the first half of 1985 or continued if and as new support becomes available. Many activities, in fact most of them, in the view of the Project, should be continued for a long time. In order to accommodate them the level of 'ambition' has been reduced in many cases. This seems to be a better alternative to terminating them altogether. A few activities which have already reached a satisfactory degree of self-sufficiency or are not expected to generate any significant impact in the near future will be terminated.

4. The proposals that follow are further based on the assumption that US $ 1.9 million, i.e. $2 million less $0.1 million over-expenditure in 1983, is available. It also reserves a contingency of about 10% for allocation between the different subjects and activities as need may arise. This is considered to be an essential minimum for effective implementation of the Project as a whole.

5. A listing of the work that is proposed to be done within the framework outlined above is attached :

- The column "Objects of major expenditure" does not specifically list staff travel and training of counterpart staff since they are common for almost all activities. It is only mentioned where the requirements are above normal.
- A few activities have a cut-off date as late as December 1985. This is made possible by the use of those associate experts who are expected to remain with the project, together with the skeleton staff, till the end of 1985.
- Common for all activities is the effort that will be made to enlist support from other sources for components of activities **or** supplementary work or follow-up work.
- If the budget permits it is suggested that two technical consultations be held. In priority order they would concern Social Feasibility of Shrimp Farming, and Extension Training.

6. The core staff of professional officers will have to be gradually reduced starting in the middle of 1984. The Development Adviser, Aquaculturist, Fishing Technologist and Fishing Craft Engineer will be retained till mid 1985. Funds will also be reserved for a skeleton staff (Project Manager and Information Officer) during the second half of 1985 for winding up purposes in the event that there will be no continued support at all.

7. In accordance with the agreement between the participating countries the staff of Coastal Aquaculture, Fishing Gear and Methods and Fishing Craft will be located in Colombo from early 1984. This also implies that the boatyard in Madras will be vacated shortly thereafter. Remaining craft development work will make use of existing facilities in Sri Lanka while for **further** construction of boats for demonstration in India and Sri Lanka, use will be made of existing boatyards in **the** respective countries.

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Work Programme : 1984-85

S.No.	Activity	Targets	Planned cut-off date (month/year)	Objects of major expenditure
1.	***Coastal Aquaculture***			
1.1	Satkhira Shrimp farm (BGD/SAP)	Experimental culture trials of ***P.*** monodon(2) and ***Macrobrachium rosenbergii(1).***	6/85	International consultants, operations.
1.2	Polekurru Shrimp farm (IND/AAP)	Continuous experimental shrimp culture trials.	6/85	Operations
1.3	Killai Shrimp farm (pens)[1] (IND/TAP)	Continuous experimental shrimp culture trials.	9/84	Operations
1.4	Seaweed Culture (MAL/SWC)	Commercial culture trials.	6/85	Subcontract for implementation consisting of staff equipment and materials.
1.5	Shrimp Hatchery Development[2] (SRL/SHD)	Establishment of a "backyard" hatchery for shrimp and a pen farm for demonstration.	6/85	International consultants (including TCDC), equipment, materials and operations.
1.6	Aquaculture Demonstration (THA/ACD)	Demonstration of cage culture at new sites in Satul, Trang, Ranong and Phuket provinces; of oyster and/or mussels at sites in Krabi, Ranong, Phuket and Satul provinces. Training in cage culture management at all project sites.	6/85	Materials, operations expenses and infrastructure facilities.

1 Social feasibility to be investigated by commercial trials is listed under EXTENSION.

2 Implementation is subject to the cooperating agency's undertaking to continue the activity beyond 6/85 since the total duration required would be above three years.

S.No.	Activity	Target	Planned cut-off date (month/year)	Objects of major expenditure
2.	***Extension***			
2.1	Audio-Visual Training Aids (BOB/AVT)	Production of videa programmes in support of extension activities. Training of counterparts.	12/85	Equipment, travel, training
2.2	Fisherwomen Activities (BGD/FWA)	Organisational consolidation of ongoing activities aimed at self-sustainment.	12/85	National consultants
2.3	Non-Formal Adult Education (IND/NFE)	Completion of the NFE package in English and Tamil including field testing.	12/84	National consultants for preparation and testing, printing of materials.
2.4	Non-Formal Primary Education (IND/EOR)	Completion of NFE teaching material in Oriya for fisherfolk children in Orissa	6/85	National consultants
2.5	Women Extension Training (IND/WET)	Continued support to the FWES in Tamil Nadu in preparation and conduct of training courses.	12/85	National consultants and training.
2.6	Extension Officer Training (IND/XOR)	Reporting	3/84	—
2.7	Institutional credit (IN D/COR)	Organisational support to the pilot project in Orissa. Training of bankers in fisheries and promotion of savings among fisherfolk.	12/84	National consultants, training
2.8	Women's income earning (SRL/WOM)	Reporting	3/84	—
2.9	Social feasibility of beachcraft introduction (SOF/BCD)	Monitoring of fishing trials in Tamil Nadu, Andhra Pradesh and Orissa to explore suitable ways of issue of craft as to organisation, management, finance, etc.	6/85	National consultants, travel
2.10	Social feasibility of pen culture of shrimps in Killai (SOF/TAP)	Monitoring of commercial culture trials conducted by members of the local communities,	12/85	National consultants

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S.No.	Activity	Target	Planned cut-off date (month/year)	Objects of major expenditure
2.11	Social feasibility of intensive shrimp culture in Satkhira (SOF/SAP)	Completion of socio-economic survey to assess present situation and identify problem areas connected with expansion of shrimp culture.	12/84	Subcontract for conduct of study
3.	***Fishing Gear and Methods***			
3.1	Set Bagnets (BG D/SBN)	Further trials (1984/85 season) and demonstration of improved nets. Assessment of the importance of the entire set bagnet fishery and identification of development measures.	6/85	TCDC consultants (fishermen from India), fishing gear.
3.2	Beach Fishing Trials (IND/BFT)	Fishing trials in support of beachcraft introduction.	6/85	Fishing gear
3.3	High-Opening Bottom Trawling (SRL/HBT)	Demonstrations of new gear and training in making and rigging of the same.	6/84	TCDC consultants (India), fishing gear, travel
3.4	Longline Fishing (SRL/LLF)	Improvement of gear including haulers for the shark fishery in Sri Lanka. Organisation of training and extension of earlier bottom set long line trials.	6/85	Fishing gear and equipment, charter of boats.
3.5	Fish Aggregating Devices (SRL/FAD)	Experiments with different types of low-cost FADS.	6/85	Materials
4.	***Fishing Craft***			
4.1	Beachcraft development (BOB/BCD)	***IND:*** Demonstration of and support to introduction of beachlanding craft (IND-20 or other feasible designs) and beach hauling system construction, testing and, as appropriate, demonstrations of IN D-24 and I ND-25.	6/85	National consultants, travel, equipment, materials
		SRL: Construction, testing and, as appropriate, demonstration of SRL-14.	6/85	Materials
		Continued testing of SRL-12.	12/84	–

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S.No.	Activity	Target	Planned cut-off date (month/year)	Objects of major expenditure
4.2	Sail Improvement (BOB/SAL)	Promotion of sailpower and demonstration of sails.	6/85	Materials
4.3	Motorization of country craft (IND/MCC)	Demonstration of motorised vallam in Adirampattinam and construction and testing of a "longtail" unit.	12/84	Equipment
4.4	Fishing Boat Development (SRL/FBD)	Construction, testing and as appropriate demonstrations of SRL-15.	6/85	Materials, contract for construction
4.5	Oru Replacement (SRL/ORU)	Commercial trials of the 40 ft. motorised ORU and the 26 ft. outrigger canoe.	3/85	–
5.	*information Service*			
5.1	Reports (REP)	Editing, printing and distribution of working papers and reports.	12/85	Printing
5.2	*Bay of Bengal News* (BBN)	Quarterly issues (24-28 pages)	12/85	Printing, travel
5.3	Publicity (PUB)	Audio-visuals on major achievements and problem areas.	6/85	–
		Pictorial book (final report) on small-scale fisheries in the Bay of Bengal.		Consultant, Printing
		Video recording of selected activities.		Filming
		Supply of information material to national and international media.		Materials, travel
5.4	Library/Documentation (LIB)	Preparation of remaining "General Descriptions".	6/85	Printing
		Continuous library service.	6/85	Books, periodicals

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Appendix 5

BAY OF BENGAL PROGRAMME AC8/9

Development of Small-Scale Fisheries (GCP/RAS/040/SWE)

8th Advisory Committee Meeting, 16-19 January 1984, Dhaka, Bangladesh

BOBP BEYOND 1985

1. The Bay of Bengal Programme (BOBP) is the regional support programme of the lOFC Committee for Development and Management of Fisheries in the Bay of Bengal, known in brief as the Bay of Bengal Committee (BOBC).

2. The existing BOBP consists of the SIDA-funded project Development of Small-Scale Fisheries in the Bay of Bengal (GCP/RAS/040/SWE) in which Bangladesh, India, Malaysia, Sri Lanka and Thailand participate and the UNDP-funded project Marine Fishery Resources Management in the Bay of Bengal (RAS/81/051) in which Bangladesh, India, Indonesia, Malaysia, Maldives, Sri Lanka and Thailand are the participating countries. Both projects are executed by FAO. Participation in all project modules of the new phase of the Programme should be open to all member countries of the- BOBC.

3. The experience of the existing BOBP has pinpointed the following advantages of a regional support programme :

- it enables the sharing of costly and scarce fisheries expertise by many countries,
- the services of experts who have become conversant with the problems and conditions of the region by being in the region can be made available as and when needed with a minimum of lead time.
- duplication of effort is avoided in respect of problems that are common to a number of countries.
- it serves as a useful support mechanism for spurring projects and programmes launched by international agencies in various countries of the region by providing an input of on-the-spot knowledge and experience.
- it is an ideal vehicle for promoting and generating technical cooperation between the participating countries.
- its component disciplines can, when required, conveniently complement and support each other.
- it ensures optimum utilization of experts' time by enabling easy switching from unproductive projects to productive ones.

4. The scope of one component of the existing BOBP is limited to the development and demonstration of technologies and methodologies for improving the socio-economic condition of small-scale fisherfolk. The scope of the other component is limited to the assessment and management of shared fish resources. While the new phase of the Programme should continue to place emphasis on the small-scale fisheries-in view of the large population of small-scale fishermen, the fact that the bulk of the fish catch comes from the inshore small-scale fisheries and the high priority accorded by the member countries to small-scale fisheries development-some modules of the Programme should also tackle major problems inhibiting development opportunities in sectors other than the small-scale sector. The scope of the of the resources component should also be expanded to cover resources of national interest other than shared stocks.

5. The role of the new phase of the Programme should, as in the existing Programme, continue to be catalytic and consultative, and should, where appropriate, continue to use the approach of pilot projects to investigate problems and opportunities, establish viability and demonstrate technologies and methodologies. There should however be greater emphasis on training and the provision of advisory services.

6. The new phase of the Programme should contain the following project modules:

1. Fishing Technology
2. Coastal Aquaculture
3. Extension Training
4. Fishery Resources
5. Legal Advisory Service
6. Development Support
7. Coastal Engineering
8. Fish Utilisation
9. Project Coordination

Details of the modules are given in the attached list.

7. In addition to other external inputs adequate funds for training/workshops, courses, etc. and staff travel should be available to all modules.

8. The Project Coordination module (module 9) should properly be funded by an international agency or in the alternative the funding should be shared by the other modules on a pro rata basis.

9. The duration of the modules should be open-ended with evaluations about every three years.

10. As in the existing BOBP the various modules should make extensive use of national consultants, institutions, organisations and agencies both government and non-government, under sub-contract arrangements.

11. The guidance and review mechanism of the programme should be similar to the Advisory Committee of GCP/RAS/040/SWE, but should be an integral part of the BOBC.

12. The inputs by the cooperating agencies of the member countries to the new phase of the Programme should be substantially similar to their inputs to the existing BOBP, but more firmly organised.

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Project Modules

Module No.	Activity	Content	Purpose	External input
1	Fishing Technology	Expertise in matters relating to fishing gear (design and material) methods and fishing aids (fish finders, haulers, and other equipment). Expertise in matters relating to fishing craft-design, construction, propulsion.	Development of fishing, fishing gear and fishing craft technology relating to : — diversification of fishing methods, improvement of fishing gear, introduction and improvisation of fishing aids for artisanal fishermen. — design and production of beachlanding craft and improvement of existing craft for artisanal fishermen. — improvement and modification of the fishing craft, fishing gear and fishing equipment of other small-scale fishermen.	Fishing technologist, fishing boat engineer, consultants, substantial funding for fishing gear materials ; supplies and materials for boat construction, equipment.
2	Coastal Aquaculture	Expertise in the farming of fish, crustaceans and other living organisms in marine and brackishwaters.	To develop and demonstrate various types of aquaculture techniques for different species of organisms; fish pond engineering technology; management practices; development of feed; survey, collection, and production of fish seed.	Aquaculturist, consultants, substantial funding for establishment and operation of aquafarms, surveys of seed resources, equipment and specialised training.
3	Extension Training	Expertise in training of extension officers and extension methodology.	Application of the extension training methodology developed by the existing BOBP in an extensive programme to train extension personnel to establish and operate projects to improve socio-economic conditions in small-scale fishing communities. Such projects would also use extension methodology developed by the existing BOBP and would concern a wide spectrum of activities e.g. credit, savings, income generation, cooperative organisation, non-formal education, social and community services, etc.	Training Officer, Extension Sociologist, funding for provision of seed money to initiate activities and utilisation of the services of national institutes and individual consultants.

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Module No.	Activity	Content	Purpose	External inputs
4	Fishery Resources	Expertise in marine biology.	Assessment, development and management of shared fish stocks and other stocks of commercial importance to member countries; advice and guidance on biological research; conduct of resources surveys and exploratory fishing in selected areas.	Fishery biologist, consultants, funding for charter/operation of fishing vessels, conduct of workshops and working groups, training activities.
5	Legal Advisory Service	Expertise in fisheries law.	Advice concerning : fisheries legislation needs arising from the declaration of exclusive economic zones; remodelling of outdated fishery legislation to cater to the needs of changed fishery situations and the requirements for development and management; commercial agreements e.g. joint ventures for utilisation of EEZ resources.	Legal Officer, limited consultancy input.
6	Development Support	Expertise in fisheries development planning and socio-economics.	Assistance to Governments in planning and preparation of projects for wider application of results from various modules of the Programme, and other projects for fisheries development in general; liaison with and assistance in mobilizing support for development from national, bilateral and international agencies; continuous updating of fisheries information in the region ; socio-economic assessments and development of extension methodology for the introduction of new technologies in traditional fishing communities.	Planning Officer/Economist, Socio-economist, limited consultancy input.
7	Coastal Engineering	Expertise in harbour engineering	Assistance in the siting, planning and design of harbours, landing facilities for beachcraft, shore facilities such as wholesale markets, cold storages, freezing and ice making plants,	Engineer, substantial consultant input.

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Module No.	Activity	Content	Purpose	External inputs
			advice in the technical aspect of management and maintenance of these facilities.	
8	Fish Utilisation	Expertise in fish technology and marketing.	Development of technology/methodology concerning the handling of fish on board fishing vessels and ashore, processing of fish for internal and export markets, avoidance of spoilage and wastage of processed fish; advisory services on internal and export marketing of fish.	Fish Technologist, Marketing Specialist, consultancy inputs. Funding for supplies, materials, equipment and training activities.
9	Project Coordination	Expertise in project management and information dissemination.	Coordination of the work of the modules of the Programme; provision of administrative support services as appropriate. Information service; coordination and publication of technical reports, production of extension and information material.	Programme Coordinator, Information Officer, funding for reporting, publication, preparation of extension and information material and administrative support.

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Development of Small-Scale Fisheries (GCP/RAS/040/SWE)

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3. Improvement of Large-Mesh Driftnets for Small-Scale Fisheries in Sri Lanka. G. Pajot. Madras, India, June 1980.

4. Inboard Motorisation of Small G.R.P. Boats in Sri Lanka. Madras, India, September 1980.

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