

**REPORT OF
THE THIRTY-SECOND MEETING OF THE PROGRAM COMMITTEE
OF THE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

**Kota Kinabalu, Malaysia
16-18 November 2009**



**THE SECRETARIAT
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

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EXECUTIVE SUMMARY

I. INTRODUCTION

1. The Thirty-second Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held in Kota Kinabalu, Malaysia from 16 to 18 November 2009, and hosted by the Marine Fishery Resources Development and Management Department (MFRDMD) in collaboration with the Department of Fisheries Malaysia and the Department of Fisheries Sabah. The objective of the Meeting was to review the SEAFDEC programs implemented in 2009 and scrutinize the programs to be implemented in 2010, to ensure that the programs are formulated and implemented in line with the priorities and needs of the Member Countries.

II. PROGRAM MATTERS

2.1 Progress and Achievements of the Program Implementation in the Year 2009

2. The meeting took note of the achievements made in the implementation of the SEAFDEC programs for the year 2009 which can be categorized into three main programs: (i) Departmental Programs; (ii) Programs under Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism; and (iii) Other Programs. The lists of programs are as follow:

2.1.1 Departmental Programs

- 1) Center-wide Information Network (*Secretariat*);
- 2) Information and Communications Technology (*TD*);
- 3) Tailor Made Training and Study Tour (*TD*);
- 4) Integrated Mollusk Production (*AQD*);
- 5) Mud Crab and Shrimp Domestication (*AQD*);
- 6) Marine Fish (*AQD*);
- 7) Small-holder Freshwater Aquaculture (*AQD*);
- 8) Seaweed Strain Improvement (*AQD*); and
- 9) Aquatic Ecology (*AQD*).

2.1.2 Programs under Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP)

- 1) Support to the Implementation of Code of Conduct for Responsible Fisheries (*Secretariat, end in 2009*);
- 2) Assistance for Capacity Building in the Region to Address International Trade-related Issues (*Secretariat*);
- 3) Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region (*Secretariat*)¹;
- 4) Environmental Related Tasks in Southeast Asia (*Secretariat, end in 2009*)²;
- 5) Support to Tsunami Rehabilitation of Affected Countries, ***New Title: Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea*** (*Secretariat*);

¹ Programs were proposed to be ended in 2009, however, the 32nd Program Committee Meeting requested that the programs should be continued in 2010.

² Starting from 2010, the project activities will be merged under the Program on “the Assistance for Capacity Building in the Region to Address International Trade-related Issues”, leading by Secretariat

- 6) Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region (*Secretariat*);
- 7) Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region (*Secretariat*);
- 8) Information Collection of Highly Migratory Species in Southeast Asia Waters (*TD*);
- 9) Responsible Fishing Technologies and Practices (Fishing in Harmony with Nature) (*TD*)¹;
- 10) Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses (*TD*);
- 11) Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty (*TD, end in 2009*);
- 12) Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2 (*TD*);
- 13) Deep Sea Fisheries Resources Exploration in the Southeast Asia (*TD*);
- 14) Development of Regional Database for Fishery Management (*TD*);
- 15) Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management (*TD*);
- 16) Quality Assurance Systems for Small- and Medium-sized Fish Processing Establishments in ASEAN Member Countries (*MFRD, end in 2009*);
- 17) Chemical and Drug Residues in Fish and Fish Products in Southeast Asia (*MFRD*);
- 18) Development of Technologies and Human Capacity Building for Sustainable Aquaculture (*AQD, end in 2009*);
- 19) Development of Fish Disease Surveillance System (*AQD, end in 2009*);
- 20) Research and Development (R&D) on Stock Enhancement for Species under International Concerns (*AQD, end in 2009*);
- 21) Research for Stock Enhancement of Sea Turtles (*MFRDMD, end in 2009*); and
- 22) Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea (*MFRDMD*).

Five Non-Funded FCG/ASSP Programs in 2009, including:

- 1) Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement (*TD*);
- 2) The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region (*MFRDMD*);
- 3) Development of Integrated Inland Fisheries Management in ASEAN Countries (*MFRDMD*);
- 4) Utilization of Freshwater Fish in ASEAN Member Countries (*MFRDMD*); and
- 5) Good Laboratory Quality Management in ASEAN Member Countries (*MFRD*).

2.1.3 Other Programs

- 1) Promotion of Set-Net: An Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management (*TD, end in 2009*);
- 2) Information Collection for Economical Important Species: as Surimi Raw Materials (*TD, end in 2009*);
- 3) Cetacean Research in Southeast Asian Waters: Cetacean Sighting Program (*TD*);
- 4) Promotion of Sustainable Freshwater Aquaculture for Rural Communities (*Secretariat in collaboration with AQD*); and

- 5) Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management towards Institutional Building and Participatory Approaches (*Secretariat in collaboration with Departments*).

2.2 Proposed Programs of Activities in the Year 2010 and Recommendations by the Program Committee Meeting

3. The meeting endorsed the proposed programs of activities by the Secretariat and Departments for the year 2010 and provided recommendations to be incorporated to the program, as follows:

2.2.1 Departmental Programs in the Year 2010

4. All Nine Departmental Programs implemented by Secretariat, TD and AQD in 2009 are continued in 2010 with the recommendations from the Program Committee Meeting:

- 1) Center-wide Information Network (*Secretariat*);
- 2) Information and Communications Technology (*TD*);
- 3) Tailor Made Training and Study Tour (*TD*);
- 4) Integrated Mollusk Production (*AQD*);
- 5) Mud Crab and Shrimp Domestication (*AQD*);
- 6) Marine Fish (*AQD*);
- 7) Small-holder Freshwater Aquaculture (*AQD*);
- 8) Seaweed Strain Improvement (*AQD*); and
- 9) Aquatic Ecology (*AQD*).

5. For the Program on “Center-wide Information Network”, the Meeting suggested that the information materials produced by SEAFDEC Secretariat and the Departments should be made available during exhibitions and expositions arranged by the respective Member Countries as well as among all Departments.

6. Under the “Information and Communication Technology”, the Meeting suggested that the contents for the Advance Fisheries Technology Magazine should be carefully selected as for applicable in the tropical fisheries region. In addition, TD should keep all Member Countries informed on the specific tailor-made training activities to be organized by TD, to give them the opportunity to take part in the activities, thus maximizing the benefits that the Member Countries would gain from the program.

7. With regard to the AQD programs, the Meeting suggested that the publications of AQD should be provided to all Member Countries to serve as references in their efforts to enhance their capabilities, however for the publications that are not downloadable through the AQD website, interested Member Countries could communicate with AQD to acquire the necessary publications on cost-recovery basis.

8. In addition, the Meeting also requested AQD to further consideration on the following topics:

- Extending the necessary technical assistance for seed production and nursery techniques on the mud crab aquaculture;
- Undertaking R&D on the use of plant meals in aquaculture feeds as alternative to fish meals;
- Extending the training on the seed production and hatchery techniques of grouper and milkfish;
- Investigating an appropriate management protocol to remove the off-flavor in tilapia;

- Extending technical assistance on the culture of seaweeds specifically on grow-out technologies, propagation techniques and product development; and
- Patenting technologies and products developed by AQD as in accordance with the guidelines for the SEAFDEC Intellectual Property Rights (IPR), as agreed in principle during the 41st SEAFDEC Council Meeting.

2.2.2 Programs under the FCG/ASSP in the Year 2010

9. The endorsed programs under this category consisted of twenty two programs; fourteen of these are continued programs from 2009 while another eight programs are proposed as new programs. The endorsed programs and recommendation by the meetings on each specific programs are listed as follows:

Programs continued from 2009

- 1) Assistance for Capacity Building in the Region to Address International Trade-related Issues (*Secretariat*);
- 2) Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region (*Secretariat*)³;
- 3) Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea” (*Secretariat*);
- 4) Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region (*Secretariat, end in March 2010*);
- 5) Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region (*Secretariat, end in June 2010*);
- 6) Information Collection of Highly Migratory Species in Southeast Asia Waters (*TD*);
- 7) Responsible Fishing Technologies and Practices (Fishing in Harmony with Nature) (*TD*);
- 8) Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses (*TD*);
- 9) Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2 (*TD*);
- 10) Deep Sea Fisheries Resources Exploration in the Southeast Asia (*TD*);
- 11) Development of Regional Database for Fishery Management (*TD*);
- 12) Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management (*TD*);
- 13) Chemical and Drug Residues in Fish and Fish Products in Southeast Asia (*MFRD*)⁴;
- 14) Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea (*MFRDMD*).

New Programs from 2010

- 15) ASEAN-SEAFDEC Conference on Sustainable Development of Fisheries and Food Security Towards 2020 (*Secretariat and all Departments*);
- 16) Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement (*TD*);

³ Programs supposed to be ended in 2009, however, the 32nd Program Committee Meeting requested that the programs should be continued in 2010.

⁴ Starting from 2010, the project will focus only on “**Biotoxin Monitoring**”

- 17) Traceability Systems for Aquaculture Products in South Asian Region (*MFRD*);
- 18) Promotion of Sustainable and Region-oriented Aquaculture (*AQD*);
- 19) Resource Enhancement of International Threatened and Over-exploited Species in Southeast Asia through Stock Release (*AQD*);
- 20) Accelerating Awareness and Capacity-building in Fish Health Management in Southeast Asia (*AQD*);
- 21) Food Safety of Aquaculture Products in Southeast Asia (*AQD in collaboration with MFRD*); and
- 22) Research and Management of Sea Turtles in Foraging Habitat in the Southeast Asia Waters (*MFRDMD in collaboration with TD*).

10. For the program on “Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea” supported by Swedish International Development Cooperation Agency (Sida), the Meeting suggested that the specific activity on Safety at Sea based on IMO framework would be continued with support from Sida while certain part of the activity specifically on safety at sea focusing on small-scale fishing boats would be undertaken by SEAFDEC/TD should be properly delineated.

11. With regard to the “Responsible Fishing Technologies and Practices”, in order to enhance the adoption of JTEDs by small-scale trawlers, TD was requested to assist the Philippines in the modification of JTEDs to ensure its applicability for its small trawlers, on a cost-sharing basis.

12. Under the “Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses”, TD was requested to consider conducting a survey to obtain information on the current level/status of post-harvest losses on-board and at the landing sites in the region.

13. With regards to the program on “Chemical and Drug Residues in Fish and Fish Products in Southeast Asia (Biotxin Monitoring)”, the Committee from Thailand suggested that focus should also be given on commercial finfish and mollusks. The training on biotoxins analyses should also include the Amnesic Shellfish Poisoning (ASP) in addition to Paralytic Shellfish Poisoning (PSP) and Diarrheic Shellfish Poisoning (DSP).

14. For the “Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea”, the Meeting suggested that the cooperation of fishers in the release sites should be enhanced and the focal points of the respective Member Countries should also monitor the progress of the tagging activities in the release areas.

15. On the “ASEAN-SEAFDEC Conference on Sustainable Development of Fisheries and Food Security Towards 2020”, the Meeting was informed that the Conference is tentatively scheduled on 13-17 June 2011 and hosted by Thailand.

16. It is expected that the Conference would come up with the next Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security Towards 2020 to be adopted by the ASEAN-SEAFDEC Ministers during the Conference to be used by the ASEAN as guiding principle and priority actions for enhancing the contribution from fisheries to food security.

17. For the program on “Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement”, the Meeting was informed that this program was initially a “non-funded program” in 2009, but with the support from the Japanese Trust Fund V, the program has been renewed and would be implemented starting in 2010.

18. For the program on “Traceability Systems for Aquaculture Products in ASEAN Region”, the Meeting recommended that the project should cover aquaculture products and MFRD should consider reviewing and evaluating all available certification schemes in the region, and come up

with a system that may be useful for the Member Countries to meet the requirements of such schemes. In this connection, the representative from ASEAN Secretariat informed the Meeting on the development of ASEAN Good Agricultural Practices (GAP) of which the steps have been taking forward particularly for aquaculture shrimp. The Committee Member for Thailand also added that the ASEAN Shrimp GAP has been initiated by the ASEAN Shrimp Alliance with Thailand as the lead country, and it is expected that the draft ASEAN Shrimp GAP would be available in 2010 to be submitted to the FAO Sub-Committee on Aquaculture.

19. With regard to the AQD's studies to enhance the digestibility of these alternative meals, the Meeting supported the conduct of the activity on genetic improvement of commercially important species including marine fishes, and development of hatchery technology.

20. For the program on "Food Safety of Aquaculture Products in Southeast Asia", the Meeting suggested that focus should be placed on the approved veterinary drugs and growth promoters used in aquaculture, and for AQD to come up with the guidelines on the proper use of chemicals to be used as reference by the Member Countries. As for the analysis on chemical residues in aquatic products, AQD would seek the cooperation of MFRD in the chemical residue analysis especially those that require specialized equipment that are not available at AQD.

21. The Meeting was informed that under the ASEAN Roadmap for Integration of Fisheries Sectors, Malaysia has been designated as the lead country in the "formulation of guidelines for the use of chemicals in aquaculture and measures to eliminate the use of harmful chemicals".

2.2.3 Other Programs in the Year 2010

22. Under this grouping, there are only two continuing programs from 2009 as follows:

- 1) Cetacean Research in Southeast Asian Waters: Cetacean Sighting Program (*TD*); and
- 2) Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches (*TD in collaboration with Secretariat*).

23. Considering a number of regional resources surveys have been conducted by TD including the cetacean research survey, the Meeting requested TD to develop certain linkages of the outcomes from these resources surveys in a thematic way and to maximize the benefits from such surveys.

24. With regards to the program on "Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches", the Meeting suggested that the outcomes of the on-site activities to promote inland small-scale fisheries management in Lao PDR and Myanmar should be shared with the Member Countries and SEAFDEC should consider the possibility of extending the activities to the other countries.

III. PIPELINE PROJECTS AND EMERGING NEEDS FOR PREPARATION OF FUTURE PROJECT PROPOSALS

25. The Meeting took note of the seven pipeline projects which are still under discussion and negotiation process with potential donor agencies, and provided recommendations as follows:

- 1) Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management (*Islamic Development Bank or IDB*);
- 2) Climate Change and Its Impacts on Fisheries and Aquaculture: Adaptation and Mitigation Towards Food Security (*ASEAN*);

- 3) Promoting Sustainable Food Production through Responsible Fishing Technologies and Practices (*ASEAN*);
- 4) Strengthen Food Security Arrangements through Fisheries Intervention: Strengthening National and Local Governments in the Development of Food Security Programs/Initiatives (*ASEAN*);
- 5) Safety at Sea for Small Fishing Boats (*SEAFDEC/Japanese Trust Fund*);
- 6) Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand (*UNEP/GEF/SCS*); and
- 7) Improved Fisheries Management through an Ecosystems Approach to Fisheries by Development and Management of *Refugia* and Marine Protected Areas in the Eastern Gulf of Thailand (*EU*).

26. With regard to the proposed pipeline programs, the Meeting requested SEAFDEC to develop the guidelines/template to collect the necessary information from Member Countries for further developed and incorporated in the concept proposal. SEAFDEC Secretariat was also asked to communicate with the Member Countries to obtain their views and priority issues relevant to food security, appropriate strategies and required activities to address such issues

27. For the proposal on “Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management as refer to the previous title on “Community Fisheries – Strengthening Organization of Communities for Sustainable Livelihoods in Coastal Areas” which was proposed for possible funding from the IDB from 2010 to 2012. The representative from the ASEAN Secretariat updated that in 2009, IDB has already accepted the proposal in principle with approximate budget of US\$ 300,000. The ASEAN Secretariat was also requested to follow-up on the status of the proposal and the comments from IDB for further action by SEAFDEC in close consultation with the Member Countries.

28. With regards to the proposal on “Safety at Sea for Small Fishing Boats”, the Meeting recommended that the activity should focus on the development of regional guidelines for Safety at Sea for vessels below 24-meters, which are not covered by the Toremolinos Protocol of the International Maritime Organization (IMO). In addition, the Meeting also requested SEAFDEC to consider conducting training for staff/inspectors of the Member Countries to inspect the safety of fishing vessels as part of the process on licensing and registration of fishing vessels.

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**REPORT OF THE THIRTY-SECOND MEETING OF THE PROGRAM COMMITTEE
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

16-18 November 2009, Kota Kinabalu, Sabah, Malaysia

I. INTRODUCTION

1. The Thirty-Second Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held in Kota Kinabalu, Sabah, Malaysia from 16 to 18 November 2009, and hosted by the Marine Fishery Resources Development and Management Department (MFRDMD) in collaboration with the Department of Fisheries Malaysia and the Department of Fisheries Sabah. The Meeting was attended by the National Coordinators from Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam together with their respective delegations as well as the representatives from regional/international organizations, namely the ASEAN Secretariat, the Colombo Plan Secretariat, and the FAO Regional Office for Asia and the Pacific (FAO/RAP). The SEAFDEC Secretary-General, Deputy Secretary-General, Department Chiefs and Deputy Chiefs as ex-officio members also attended the Meeting together with officers from the SEAFDEC Secretariat and the Departments. The List of Participants appears as **Annex 1**.

II. OPENING OF THE MEETING

2. The SEAFDEC Secretary-General, Dr. Chumnarn Pongsri in his capacity as the Chairman of the SEAFDEC Program Committee, welcomed the participants to the Meeting. He expressed his appreciation to MFRDMD, the DOF Malaysia and the DOF Sabah for the warm hospitality and arrangements for the Meeting, and outlined the importance of the SEAFDEC Program Committee, particularly in discussing and scrutinizing the program of activities to be implemented by SEAFDEC. He added that the Meeting would also be informed on the progress of the planned ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020, and that the recommendations of the Second Meeting of the Regional Advisory Committee for Fisheries Management in Southeast Asia (RAC) would be provided to the Meeting in order to streamline the recommendations from RAC with the future SEAFDEC programming exercises. He also informed the Meeting that the outcomes from this Meeting would be submitted to the forthcoming Meetings of the SEAFDEC Council and the ASEAN-SEAFDEC Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) for further consideration and policy support, and then declared the Meeting opened. His Opening Remarks appears as **Annex 2**.

III. ADOPTION OF THE AGENDA

3. The Agenda which appears as **Annex 3** was adopted.

**IV. REVIEW OF SEAFDEC PROGRAM IMPLEMENTATION FOR THE YEAR 2009
AND PROPOSED PROGRAMS FOR THE YEAR 2010**

4. While congratulating SEAFDEC for the achievements in the implementation of several programs during the past year, the Committee provided views and recommendations to be incorporated into the program of activities for 2010. The Committee also suggested that SEAFDEC should also develop policy mechanism to ensure that the programs formulated and implemented by SEAFDEC respond to the needs of the Member Countries and that the benefits from the activities are fairly shared by all the Member Countries. In this regard, the Committee also recommended that a monitoring and evaluation system should also be established to assess the outcomes and outputs of the programs and their contributions to fisheries development of the

region. In addition, the Committee also requested that SEAFDEC should also inform the Program Committee on the achievements and outcomes of the activities, *e.g.* status of the region's fishery resources, Cetacean species found in particular areas/waters in the region, species identification sheet, as well as the possible impacts of such achievements to the fisheries development in the Member Countries.

5. While considering that SEAFDEC has been undertaking several research and development activities and that there are also relevant national activities currently being undertaken by the respective Member Countries, the Committee recommended that SEAFDEC should coordinate with the Member Countries in the implementation of the relevant programs to maximize the benefits and outcomes from the programs implemented by SEAFDEC. In this connection, some staff of the fisheries agencies of the Member Countries should be allowed to take part in the R&D activities of the Departments on a cost-sharing basis with countries responsible for the travel expenses and allowances of their representatives.

6. The Committee also requested that in the future preparation of the program documents for the Program Committee Meeting, the participating countries of the various activities should be indicated in the documents and that the general SEAFDEC work-plan should also be included in the program documents. In addition, SEAFDEC should circulate the meeting documents, preferably one month in advance, to the Member Countries to enable them to prepare the necessary inputs to the Meeting.

7. In order to facilitate the common understanding on the status of the programs undertaken by SEAFDEC, the Committee suggested that programs and projects, except those that are continuing should be classified into: i) Completed Project: for projects with activities that are already completed within the project period (follow-up activities if necessary should be considered as new projects); ii) New Phase Project: for projects that could not be completed based on the original proposed duration and that the project period is extended for certain activities; and iii) Non-funded Project: for projects where financial sources have been discontinued but is deemed necessary to implement the projects for the benefit of the Member Countries and therefore funding support should be sourced, but taking note that such projects should be dropped from the list of non-funded projects if still inactivated after three years.

4.1 Departmental Programs

8. While considering the progress and achievements in the implementation of SEAFDEC Departmental Programs in 2009 and the proposed programs for 2010 (**Annex 4**), the Committee offered recommendations for the improvement of the programs and endorsed the programs taking into consideration the respective recommendations.

- **SEAFDEC Secretariat**

9. With regards to the program on "Center-wide Information Network", the Committee congratulated SEAFDEC for carrying out information and public relation activities during the past year, to promote the visibility of the Center and requested SEAFDEC to intensify the implementation of such activities in order to further enhance the visibility of SEAFDEC in a broader context, particularly through national and regional events, *e.g.* exhibitions, expositions. In addition, the Committee also suggested that in order to further enhance the visibility of SEAFDEC as a whole and to ensure a wider dissemination of SEAFDEC information in the region, the information materials produced by SEAFDEC Secretariat and the Departments should be made available during exhibitions and expositions arranged by the respective Member Countries as well as among all Departments.

10. Moreover, as suggested by the Committee Member for the Philippines, additional copies of SEAFDEC publications should be provided to the Member Countries to also enhance the wider distribution of such information materials to various groups of stakeholders, *e.g.* relevant government offices, the academe, fisheries associations, fisherfolks, and thus, would further improve the public's awareness and the visibility of SEAFDEC.

- **Training Department**

11. Regarding the Program on "Information and Communications Technology", the Committee suggested that information in all SEAFDEC information materials should be those that are applicable for the region. Specifically for the Advance Fisheries Technology magazine produced by TD, the contents should be carefully selected and that a disclaimer should be included indicating that some materials are for information only and that SEAFDEC does not endorse the technologies which have not been shown to be applicable for the tropical fisheries of the Southeast Asian region.

12. With regards to the "Tailor-Made Training and Study Tour", the Committee was informed on the directive made by the SEAFDEC Council to maximize the use of available resources and expertise at the Departments in providing HRD services to other institutions of the Member and non-Member Countries, provided that such activities do not conflict with the existing activities of the Departments. Considering such directive, TD has continued to offer tailor-made training programs and study tour for representatives from other institutions in the SEAFDEC Member Countries and non-Member Countries, on a cost-recovery basis.

13. While noting that most of the activities under the "Tailor-Made Training and Study Tour" program have been organized for non-Member Countries and to some extent for representatives from Thailand, the Committee requested TD to also explore the possibility of extending the program to all Member Countries. In response, the Committee was informed that the tailor-made training programs have been organized in addition to the regular training activities offered by TD to all Member Countries. In this regard, the proposed participation of the Member Countries in the program could be accommodated but would still be subject to the cost-recovery scheme of SEAFDEC. The Committee suggested that TD should keep all Member Countries informed on the specific tailor-made training activities to be organized by TD, to give them the opportunity to take part in the activities, thus maximizing the benefits that the Member Countries would gain from the program.

14. In connection with the Study Tour on Tuna Long-line Fishing arranged by TD for 3-20 November 2009, the Committee Member for Thailand expressed the willingness of Thailand to take part in a similar program in the future. In addition, TD was also requested to explore the possibility of involving Thailand in future study programs, specifically on tuna long-line fishing operations.

15. The Committee was also informed on the ongoing establishment of a collaborative arrangement between TD and the National Agriculture Training Council (NATC) of the Ministry of Agriculture and Agro-Based Industry of Malaysia on 'Train the Trainers' program for the College of Agriculture Malaysia and the various schools established by the NATC, in various areas of marine fisheries. Under the proposed arrangement, TD has been requested to offer training for NATC trainers and instructors on cost-recovery basis, on Fishing Gear Technology, Navigation, Marine Engineering as well as on other relevant areas such as audio-visual and media development, fisheries management, fishery resources enhancement, fishery extension methodology, oceanography, and fisheries information system and data base development, simulator systems in capture fisheries. The signing of the Agreed Minutes for the SEAFDEC/TD-NATC collaboration is expected to be held in Kuala Lumpur before the end of November 2009.

- **Aquaculture Department**

16. While congratulating AQD for the activities it has conducted on the development and dissemination of aquaculture technologies to the Member Countries, the Committee suggested that the publications of AQD, *e.g.* technical handbooks, research papers, manuals, should be provided to all Member Countries to serve as references in their efforts to enhance their capabilities. In response, AQD reiterated that most of the publications it had produced are listed and could be downloaded through the AQD website and that the Member Countries could easily access such materials. However, for the publications that are not downloadable through the AQD website, interested Member Countries could communicate with AQD to acquire the necessary publications on cost-recovery basis.

17. Regarding the research on the culture of abalone under the “Mollusk Program”, and in response to the query related to the taste and flavor of the meat of abalone hybrids, AQD clarified that the taste of the meat has been considered in several feeding protocols but actual sensory tasting of the abalone hybrids has not yet been conducted. Moreover, the Committee Member for Malaysia expressed the interests of Malaysia to participate in the training programs organized by AQD particularly on the grow-out and hybridization of abalone.

18. For mud crab, the Committee Member for Malaysia commended AQD for the activities it has undertaken particularly on seed production and nursery techniques as the technology is important for the development of mud crab aquaculture in the region. Malaysia also expressed the interest on the training on mud crab seed production and culture conducted by AQD. The Committee Member for Myanmar also expressed appreciation to AQD specifically on the training extended to Myanmar on mud crab aquaculture, and informed the Committee that Myanmar has carried out seed production activities of mud crab but the survival of the instars was still very low and thus, would still need the technical assistance of AQD, and specifically to extend the training on nursery techniques for mud crab to Myanmar. In addition, the Committee Member for Myanmar also informed the Committee that efforts have been made to conserve the country’s mud crab natural resources and that Myanmar has issued regulations prohibiting the catch of small crabs, and a crab bank scheme based on techniques developed by Thailand and enhanced through a SEAFDEC/TD project on “Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty”, would also be carried out. In this regard, the Committee requested AQD and TD to extend the necessary technical assistance to enable Myanmar to further intensify its efforts in protecting and conserving its mud crab natural resources.

19. With regards to the “Marine Fish Program”, the Committee supported the conduct of studies by AQD on the use of plant meals in aquaculture feeds as alternative to fish meals considering that there is a need to address the use of fish meal in aquaculture feeds which has been raised in relevant international fora and was also identified as one of the cluster issues/activities that would be addressed under the ASEAN Fisheries Consultative Forum (AFCF). In addition, the Committee member for Thailand requested that the program should be extended and implemented at a regional level.

20. The Committee Member for Myanmar expressed appreciation to AQD for extending assistance on the seed production of sea bass, which allowed Myanmar to successfully produce sea bass seeds. As a way forward, the Committee Member for Myanmar requested AQD to extend training on the seed production and hatchery techniques of grouper to enable Myanmar to also carry out seed production of grouper, and suggested that SEAFDEC should explore the possibility of conducting research activities for the aquaculture of cold water fish species. However, AQD informed the Committee that AQD has no capacity to undertake research activities on cold water fish. In addition, the Committee Member for Malaysia also requested AQD to extend the techniques on the culture of milkfish to Malaysia, considering that the species has high feed efficiency and require low inputs, and thus could be promoted in the country’s rural areas.

21. On “Small-holder Freshwater Aquaculture Program”, the Committee requested AQD to look into the appropriate management protocol to remove the off-flavor in tilapia before harvesting and marketing. In response, AQD informed the Meeting that AQD has already planned to undertake the research on this aspect in 2010.

22. With regards to the program on “Seaweed Strain Improvement”, the Committee Member for Malaysia requested AQD to extend technical assistance on the culture of seaweeds to Malaysia, specifically on grow-out technologies, propagation techniques and product development especially that seaweed is also being cultured in Malaysia particularly in the State of Sabah.

23. Considering the amount of scientific work, technologies developed and the products that AQD had generated, the Committee Member for Brunei Darussalam suggested that AQD should patent such technologies and products. In this regard, AQD informed the Committee that the patenting processes including the possibility of using brand names and trademarks are already ongoing after the SEAFDEC Council during its 41st Meeting in April 2009, agreed in principle with the guidelines for the SEAFDEC Intellectual Property Rights (IPR).

4.2 Programs under Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism

24. The Meeting considered and endorsed the progress and achievements in the implementation of the programs under the ASEAN-SEAFDEC Fisheries Consultative Group Mechanism for the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) in the year 2009 and the proposed activities for 2010 as well as the non-funded programs (**Annex 5**).

25. With a view to ensure that the programs properly address the priorities and needs of the Member Countries, the Committee also provided views and recommendations to be incorporated into the program of activities that would be implemented in 2010, as follows:

- **SEAFDEC Secretariat**

26. The Committee noted that the program on “Support to the Implementation of Code of Conduct for Responsible Fisheries” would be completed by the end of 2009. However, there will be a continued support to the CCRF as most of the activities, *i.e.* on vessel record, integration of fisheries and habitat management, regional cooperation and the development of ASEAN Fisheries Consultative Forum would be implemented under the program on “Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea” supported by Swedish International Development Cooperation Agency (Sida). In this connection, the specific activity on Safety at Sea based on IMO framework would be continued with support from Sida while certain part of the activity specifically on safety at sea focusing on small-scale fishing boats would be undertaken by SEAFDEC/TD using the unspent budget of SEAFDEC. In this regard, the Committee suggested that the specific activities on Safety at Sea under Sida and those under SEAFDEC should be properly delineated.

27. While noting that the program on “Support to the Implementation of CCRF” focused on the Gulf of Thailand sub-regional area and that the program on “Activities Related to Climate Change” has particular focus on the Andaman Sea, the Committee therefore requested SEAFDEC to also consider addressing the other sub-regional areas of Southeast Asia into the SEAFDEC program framework. Information was provided by Sida that the 3rd Meeting of the Gulf of Thailand would be organized by Sida in 2010 and the activities in the Sulu-Sulawesi sub-region would also be included during the Meeting. In addition, considering that representatives from the SEAFDEC Secretariat and Departments have been participating in several regional/international meetings, the Committee suggested that the issues discussed and the outcomes of such meetings



particularly on the issues that have implication to fisheries development in the region, should be extracted and compiled for dissemination to the Member Countries for information and reference.

28. The Committee was informed that the program on “Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea” was originally requested for funding support from Sida under the title “Support to Tsunami Rehabilitation of Affected Countries in the ASEAN Region.” However, considering that the program focused on the improvement of fisheries management, sub-regional cooperation and mitigating the impacts of climate change, which are relevant to the Southeast Asian region, the outcomes from the program would also be extended to the other sub-regional areas in Southeast Asia.

29. With regards to the Program on “Assistance for Capacity Building in the Region to Address International Trade Related Issues”, the Committee emphasized on the importance of establishing coordinated positions among the Member Countries which should be reflected at relevant international fora to safeguard the priority and interests of the countries in the region. In this regard, the Committee Member for Thailand requested that the regional coordinated position on aquaculture certification should be established as soon as possible to be presented during the FAO Sub-Committee on Aquaculture to be organized in early 2010.

30. The Committee Member for Japan also requested SEAFDEC to give careful consideration on the proposed listing of commercially exploited aquatic species into the appendices of the Convention on the International Trade of Endangered Species of Wild Flora and Fauna (CITES), and informed the Committee that the 15th Session of the Conference of Parties of CITES (COP15-CITES) would be organized in March 2010. In this connection, the RTC on International Fisheries-related Issues to be organized by SEAFDEC in February 2010 should incorporate the CITES issues as part of the Agenda. In addition, considering that the Meeting of the ASEAN Expert Group on CITES (AEG-CITES) would be organized in May 2010, SEAFDEC was asked to invite ASEAN and the Chairman of the AEG-CITES to attend in the RTC. Moreover, the participation of fisheries authorities of the Member Countries in the COP15-CITES has been encouraged, or coordination should be made with the representatives of countries attending the COP15-CITES to actively participate and provide inputs in the fisheries-related session.

31. In addition, the representative from FAO informed the Committee that FAO has established an FAO *Ad-hoc* Advisory Panel for CITES in order to review the listing of commercially exploited aquatic species and provide the technical/scientific advice from FAO and other relevant Regional Fisheries Bodies including SEAFDEC to CITES. In this regard, FAO would communicate with SEAFDEC to obtain the information on species of interest which could be incorporated into the document to be provided to CITES through the Panel. In addition, the AEG-CITES could also provide the relevant information to FAO through SEAFDEC.

32. With regards to the Port-State Measures, the Committee Member from Malaysia requested the SEAFDEC Secretariat to consider conducting a regional consultation to review the status and difficulties faced by Member Countries in the implementation of the Port-State Measures. He also informed the Committee that as the EU Regulation on Catch Certificates would be put into effect starting from 1 January 2010, the products to be exported by other Member Countries to Malaysia as raw materials for products to be exported to the EU countries should be accompanied by the Catch Certificates as required by the EU.

33. The Committee recognized that the program on “Assistance for Capacity Building in the Region to Address International Trade Related Issues” is very important in providing the Member Countries with better understanding on the international emerging issues that have implications to fisheries of the region. However, the component on “Responsible Fishing Technologies and Practices (Fishing in Harmony with Nature)”, due to the different nature of its activities, should not be incorporated in this program. Moreover, the Committee was informed that starting in 2010,

the program on “Environmental Related Tasks in Southeast Asia” will be merged with the program on “Assistance for Capacity Building in the Region to Address International Trade Related Issues”.

34. The Committee Member for Thailand informed the Meeting that the Department of Fisheries (DOF) of Thailand has established an e-Conference system, and is now able to communicate with other Member Countries on the issues of importance through this channel. In this connection, the said e-Conference system of the DOF could be tapped for the development of the coordinated positions of the region on issues of importance to the development of sustainable fisheries.

35. With regards to the program on “Information Collection of Highly Migratory Species in Southeast Asian Waters”, which aims to improve the tuna information collection in the region, the Committee Member for Vietnam expressed his appreciation to SEAFDEC for including Vietnam as one of the countries involved in the implementation of the activities.

36. On the program on “Improvement of Fishery Statistics and Information for Planning and Management of Fisheries in the ASEAN Region”, the Committee Member for the Philippines informed the Meeting that the invitation for the RTC on Fishery Information and Statistics scheduled for January 2010 has been sent to the BFAR. However, since BFAR is in-charge of fisheries stock assessment only while the Bureau of Agricultural Statistics (BAS) is in-charge of fisheries statistics, SEAFDEC would also invite a representative from BAS to attend the RTC. In this regard, the Committee was informed that representatives from the Member Countries participating in the RTC are the Members of the Network on Fishery Statistics nominated by the respective Council Directors of the Member Countries.

37. Considering that the program on “Promotion of “One Village, One Fisheries Products (FOVOP) System to Improve the Livelihood for the Fisheries Communities in ASEAN Region” will be completed in February 2010, the Committee was informed that all on-site activities should be implemented by the end of 2009. In this regard, the SEAFDEC Secretariat would coordinate with Vietnam to set the schedule of the National Workshop.

38. On the “ASEAN-SEAFDEC Conference on Sustainable Development of Fisheries for Food Security Towards 2020”, the Committee was informed that the Conference is tentatively scheduled on 13-17 June 2011 and hosted by Thailand. The proposal, particularly on the conduct of Ministerial Meeting and the participation of Senior Officials and Ministers responsible for fisheries of the ASEAN Member Countries, has been endorsed by 31st AMAF in November 2009. It is expected that the Conference would come up with the next Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security Towards 2020 to be adopted by the ASEAN-SEAFDEC Ministers during the Conference to be used by the ASEAN as guiding principle and priority actions for enhancing the contribution from fisheries to food security. The Committee was also informed that the detailed information and work plan on the Conference would be discussed during the 12th Meeting of the FCG-ASSP.

- **Training Department**

39. The Committee was informed that the program on “Responsible Fishing Technologies and Practices (Fishing in Harmony with Nature)” would end by December 2009 and that some activities would be merged with the program on “Assistance for Capacity Building in the Region to Address International Trade Related Issues”. However, the Committee Member for the Philippines stressed the importance of the activities under the program to support Member Countries in the implementation of responsible fishing technologies and practices, including those on by-catch and discard, gear selectivity, safety at sea for small-scale fishers and fishing boats. In this regard, SEAFDEC was requested to consider the continuation of these activities with support from the Japanese Trust Fund. In addition, the Committee was also informed that in order to



undertake activities on responsible fishing technologies and practices, SEAFDEC has also prepared the proposal for a new program on “Promoting Sustainable Food Production through Responsible Fishing Technologies and Practices” for possible funding support from the ASEAN dialogue partners and donors.

40. The Committee Member for the Philippines also informed the Committee that by the year 2010, the Philippines would enact a policy requiring all commercial trawlers to be equipped with the Juvenile and Trash Excluder Devices (JTEDs). In order to also enhance the adoption of JTEDs by small-scale trawlers, TD was requested to assist the Philippines in the modification of JTEDs to ensure its applicability for small trawlers in the Philippines, on a cost-sharing basis.

41. With regards to the program on “Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses”, the Committee Member for Singapore requested TD to also consider conducting a survey to obtain information on the current level/status of post-harvest losses on-board and at the landing sites in the region.

42. For the program on the “Development of Regional Database for Fishery Management”, the Committee Member for Singapore requested SEAFDEC to extend to Singapore the HRD activities on fishery statistics and the use of statistics and databases. Moreover, considering the difference in the nature and scope of activities on the development of database and on fishery statistics and information, the Committee suggested that these two components should be implemented in the separate programs in 2010, namely: i) the Development of Regional Database for Fishery Management, and ii) the Improvement of Fishery Statistics and Information for Planning and Management of Fisheries in the ASEAN Region, with funding support from the Japanese Trust Fund.

43. With regards to the program on “Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty”, the Committee Member for Thailand congratulated TD for conducting this program as it promotes the enhancement of the roles of local communities in the management of fisheries. As the program would end in 2009, TD was requested to explore possible funding from the Japanese Trust Fund to conduct relevant follow-up activities in the other Member Countries building on the success of the program as well as seek the technical support from Japan in fisheries management to further enhance the achievement of this program, *e.g.* establishment of fisheries cooperatives to support the management of fisheries.

44. For the program on “Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement”, the Committee was informed that this program was initially a “non-funded program” in 2009, but with the support from the Japanese Trust Fund V, the program has been renewed and would be implemented starting in 2010.

- **Marine Fisheries Research Department**

45. With regards to the program on “Chemical and Drug Residues in Fish and Fish Products in Southeast Asia (Biotxin Monitoring)”, the Committee Member for Thailand commended the conduct of a survey and monitoring of biotoxins as this activity is very relevant to the region, and suggested that focus should also be given on commercial finfish, *e.g.* red sea bream in addition to mollusks, *e.g.* mussels, oysters, cockles. The training on biotoxins analyses should also include the Amnesic Shellfish Poisoning (ASP) in addition to Paralytic Shellfish Poisoning (PSP) and Diarrhetic Shellfish Poisoning (DSP). In addition, training on the Bioassay of biotoxins as an alternative method for the biotoxin screening, should also be considered for the Member Countries.

46. For the program on “Traceability Systems for Aquaculture Products in ASEAN Region”, the Committee recommended that the project should cover aquaculture products and not only the aquaculture farms. In addition, in developing the traceability system for aquaculture products of

the region, MFRD should consider reviewing and evaluating all available certification schemes in the region, and come up with a system that may be useful for the Member Countries to meet the requirements of such schemes.

47. The representative from ASEAN Secretariat informed the Committee on the development of ASEAN Good Agricultural Practices (GAP) of which the steps have been taking forward particularly for aquaculture shrimp. The Committee Member for Thailand also added that the ASEAN Shrimp GAP has been initiated by the ASEAN Shrimp Alliance with Thailand as the lead country, and it is expected that the draft ASEAN Shrimp GAP would be available in 2010 to be submitted to the FAO Sub-Committee on Aquaculture. In this regard, in order to coordinate the SEAFDEC activities on traceability with the ASEAN Shrimp GAP, invitation should also be extended to the ASEAN Secretariat to participate in the RTC on traceability to be organized by MFRD. In addition, the appropriate staff of MFRD should also take part in the ASEAN Meetings on the development of the ASEAN GAP.

- **Aquaculture Department**

48. The Committee noted that the program on “Promotion of Sustainable and Region-oriented Aquaculture” focuses on the development of aquaculture technologies and the dissemination of developed technologies and information to Member Countries through training. The Committee also stressed the importance of the study on other sources of protein as alternatives to fish meal as well as on the development of disease-resistant strains for aquaculture. On the development of environment-friendly feeds using regionally available ingredients, the Committee was informed that AQD has been conducting studies on several plant and leaf meals but still need further studies to enhance the digestibility of these alternative meals. In addition, the Committee also supported the conduct of the activity on genetic improvement of commercially important species including marine fishes, and development of hatchery technology.

49. As for the program on “Food Safety of Aquaculture Products in Southeast Asia”, the Committee agreed that the study on withdrawal period of antibiotics is very important in aquaculture. However, the Committee also suggested that focus should be placed on the approved veterinary drugs and growth promoters used in aquaculture, and for AQD to come up with the guidelines on the proper use of chemicals to be used as reference by the Member Countries. As for the analysis on chemical residues in aquatic products, AQD would seek the cooperation of MFRD in the chemical residue analysis especially those that require specialized equipment that are not available at AQD.

50. The Committee was informed that under the ASEAN Roadmap for Integration of Fisheries Sectors, Malaysia has been designated as the lead country in the “formulation of guidelines for the use of chemicals in aquaculture and measures to eliminate the use of harmful chemicals”. Considering the need to establish a linkage between the activities of AQD and the efforts under the ASEAN framework, the Committee Member for Malaysia informed the Committee that the Workshop on the Use of Chemicals and Drugs in Aquaculture would be conducted in Kuala Lumpur, Malaysia on 2-3 December 2009. In this regard, the SEAFDEC Member Countries and AQD were encouraged to actively take part in the Workshop, and that their participations should be confirmed as soon as possible.

- **Marine Fishery Resources Development and Management Department**

51. On the “Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea”, the Committee Member for Myanmar informed the Committee that Myanmar has collaborated with MFRDMD and TD in the tagging activities in the Andaman Sea in 2008 with the on-site training and tagging operations implemented in two sites, namely Boke Pyin and Kaw Thaug townships. Since the outcomes from the tagging operations indicated that

Myanmar waters are the feeding grounds for *Rastrelliger brachysoma*, MFRDMD was requested to consider the conduct of tagging activities also in other parts of the country.

52. While expressing the concern on low recapture rate of tagged fish, the Committee suggested that the cooperation of fishers in the release sites should be enhanced and that awareness building for fishers should be improved so that recaptured tagged fish could be properly reported. In this connection, the focal points of the respective Member Countries should also monitor the progress of the tagging activities in the release areas.

53. With regards to the program on “Research for Stock Enhancement of Sea Turtles”, the Committee Member for Myanmar informed the Committee on the ongoing activities conducted by the country on the nesting areas and migration pattern of sea turtles. Based on the results of these activities, Myanmar is planning to conduct tagging of sea turtles in the newly found nesting areas and in the existing conservation areas from 2010-2014. In this regard, MFRDMD was requested to provide the applicators and Inconel tags (MM-3001 to 5000) for such activities. For the proposed tagging of the olive Ridley turtles in Myanmar using PTT tags, MFRDMD was also requested to include the tagging of green turtles as part of the program activities.

54. With regards to the program on “Research and Management of Sea Turtles in Foraging Habitat in the Southeast Asian Waters”, the Committee Member for Vietnam supported the activities to be implemented in Vietnam considering the decreasing number of sea turtles in the waters of Vietnam, and informed the Committee that Vietnam has recently initiated the preparation of a national plan of action for the conservation of sea turtles.

Non-Funded Programs

55. The Meeting took note of the programs under the FCG/ASSP Mechanism of which the funding support for the implementation of such programs are currently not available. The list of the non-funded programs appears in the **Annex 5**.

56. With regards to the program on “Utilization of Freshwater Fish in ASEAN Member Countries”, the Committee recommended that since INFOFISH has already initiated the implementation of a program with similar nature of activities, MFRD should contact INFOFISH for more information and possible collaboration.

57. The program on “Good Laboratory Quality Management in ASEAN Member Countries”, the activities have been implemented by MFRD and completed in 2006. Considering that laboratory accreditation should be placed under responsibility of the respective Member Countries, the Committee Member for Singapore suggested that this program should be dropped from the list of non-funded programs.

58. Regarding the program on “Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries” with Singapore as the lead country, as the program has been successfully completed, the Committee agreed that this should be dropped from list of non-funded programs.

4.3 Other Programs

59. The Meeting considered and endorsed the progress and achievements in the implementation of other SEAFDEC programs/activities in the year 2009 and the proposed programs for 2010 (**Annex 6**).

60. With regards to the program on “Information Collection for Economical Important Species: as Surimi Raw Materials”, the Committee noted that the information materials, *e.g.* publications, posters, produced under this project are already available and downloadable through the TD website (www.seafdec.or.th).

61. For the program on “Cetacean Research in Southeast Asian Waters: Cetacean Sighting Program”, the Committee Member for Myanmar informed the Committee that Myanmar has started the activities on the conservation and management of cetaceans, particularly the Irrawaddy dolphins as well as other cetacean species in the coastal areas of Myanmar, and that Myanmar would be willing to collaborate with regional/international organizations including SEAFDEC in implementation of activities on cetacean survey and conservation.

62. Considering that a number of regional resources surveys have been conducted by TD including the cetacean research survey, the Committee requested TD to develop certain linkages of the outcomes from these resources surveys in a thematic way, the result of which should be made accessible to the Member Countries in order to maximize the benefits from such surveys.

63. With regards to the program on “Promotion of Sustainable Freshwater Aquaculture for Rural Communities“, the Committee was informed that SEAFDEC Secretariat successfully conducted the joint regional training on Community-based Freshwater Aquaculture for Remote Rural Areas of Southeast Asia as the main program activity in 2009. However in 2010, this activity would be incorporated under the new program on “Promotion of Sustainable and Region-oriented Aquaculture” to be undertaken by AQD.

64. For the program on “Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches”, the Committee noted that since the on-site activities have been implemented only in Lao PDR and Myanmar. In this regard, the Committee suggested that the outcomes of the project implementation should be shared with the Member Countries and that SEAFDEC should consider the possibility of extending the activities to the other countries in the region considering the significant contribution of inland small-scale fisheries to the socio-economic well-being of the rural fisherfolk. However, considering that the outcomes would be presented during the regional workshop planned for 2011, the Member Countries were encouraged to attend the Workshop which could be considered as a regional platform to facilitate the sharing of information and experiences on the relevant activities undertaken by the Member Countries as well as other relevant organizations such as the Mekong River Commission.

4.4 Outlook of Japanese Trust Fund for the Year 2009 and 2010

65. The Committee while taking note of the report on the outlook of the Japanese Trust Fund for 2009 and 2010 (**Annex 7**), expressed its appreciation to the Government of Japan for providing continued support for the implementation of SEAFDEC programs and activities, particularly those under the FCG-ASSP Mechanism. The Committee, however, requested that in the document which will be provided to the Program Committee Meeting, the ending year of all projects should also be specified.

4.5 Enhancing ASEAN Plus Three (APT) Cooperation in Fisheries through SEAFDEC

66. The representative from ASEAN Secretariat made a presentation on “Enhancing ASEAN Plus Three (APT) Cooperation in Fisheries through SEAFDEC” (**Annex 8**), and informed the Meeting on the overview of the APT cooperation, highlighting on the importance of food security, fisheries and aquaculture as priority areas of cooperation. He further informed the Meeting on the result of the 9th ASEAN Plus Three Ministers on Agriculture and Forestry (AMAF Plus Three) held on 11 November 2009 in Brunei Darussalam regarding the cooperation with SEAFDEC. The

AMAF Plus Three Meeting endorsed the project of Japan on the Promotion of Sustainable Aquaculture and Resource Enhancement in Southeast Asia with SEAFDEC as the implementing agency and welcomed the proposal to utilize the “Fish for the People 2020” Conference as a venue for the APT dialogue on policy and cooperation in fisheries.

67. In this regard, he underscored the recognition by ASEAN and the Plus Three Countries of SEAFDEC as an important partner in fisheries cooperation. This could be an opportunity to raise the profile of SEAFDEC and JTF support to fisheries in Southeast Asia to ASEAN Plus Three high level policy makers. He also stressed that SEAFDEC including JTF support could help in shaping future APT cooperation in fisheries, including policy and cooperation dialogue during the “Fish for the People 2020” Conference, and formulation of supporting programs to be implemented based on the outcome of the Conference.

68. Along this line, the Committee recommended that a summary report on JTF support to SEAFDEC and ASSP should be packaged and reported during the future meetings of FCG-ASSP and ASWGF. In addition, SEAFDEC should also participate in future meetings of Special SOM-AMAF+3 (August) and AMAF+3 Meeting (October) to lead in the preparation of APT policy and cooperation dialogue in fisheries as well as lead in the development of APT initiatives to support the implementation of the outcomes of the Conference, and these recommendations should be submitted to the 12th Meeting of FCG-ASSP.

V. PIPELINE PROJECTS AND EMERGING NEEDS FOR PREPARATION OF FUTURE PROJECT PROPOSALS

69. The Meeting took note of the pipeline projects (**Annex 9**) which are still under discussion and negotiation process with potential donor agencies.

70. The Committee was informed that the pipeline programs have been proposed by SEAFDEC in response to the emerging interest of donors in line with the needs and interests of the Southeast Asian region. During the negotiation process the concept proposal may not contain detailed elaboration on the activities to be undertaken under the program. However, throughout the negotiation process, the detailed information could be further developed and incorporated in the concept proposal in close communication with the Member Countries. The Committee then requested SEAFDEC to develop the guidelines/template to collect the necessary information from Member Countries, *e.g.* important issues, required strategic thrusts and activities, etc. to be used as basis in the formulation of the program activities for the final proposal.

71. With regards to the pipeline programs on “Climate Change and Its Impacts on Fisheries and Aquaculture: Adaptation and Mitigation Towards Food Security”, “Promoting Sustainable Food Production through Responsible Fishing Technologies and Practices”, and “Strengthen Food Security Arrangements through Fisheries Intervention: Strengthening National and Local Governments in the Development of Food Security Programs/Initiatives”, the Committee noted that these three areas of concept notes were proposed by SEAFDEC as contribution of the fisheries sector in the implementation of the ASEAN Food Security (AIFS) Framework and SPA-FS as adopted at the 14th ASEAN SUMMIT in March 2009, and during the ASEAN-FAO Conference on Food Security held in May 2009. These three areas of concept notes were then developed and proposed, and received support by ASEAN starting from the 17th ASWGF in June, and the Special SOM-30th AMAF in August 2009. The ASEAN Secretariat has submitted the Concept Note Proposals for funding support from the ASEAN-US cooperation, and also explored possible funding from the trust fund within the ASEAN Secretariat.

72. While noting that the Concept Note Proposal was developed based on the Strategic Thrust of the ASEAN Integrated Food Security (AIFS) Framework, the Committee was also informed that the priorities and needs of Member Countries could still be incorporated into the detailed program proposal which will be further developed. In this regard, the SEAFDEC Secretariat was

asked to communicate with the Member Countries to obtain their views and priority issues relevant to food security, appropriate strategies and required activities to address such issues, etc.

73. With regards to the program on “Safety at Sea for Small Fishing Boats”, the Committee while supporting that the activities should be implemented in the region, recommended that the activity should focus on the development of regional guidelines for Safety at Sea for vessels below 24-meters, which are not covered by the Toremolinos Protocol of the International Maritime Organization (IMO). The Committee also suggested that similar guidelines developed by other organizations and countries could be used as a basis in the development of the regional guidelines by SEAFDEC.

74. The Committee also requested SEAFDEC to consider conducting training for staff/inspectors of the Member Countries to inspect the safety of fishing vessels as part of the process on licensing and registration of fishing vessels, and practical workshop or training on safety at sea for authorities responsible for fisheries and fishers. In this regard, SEAFDEC should explore additional funding support for the activity. However, the Committee was informed that the activity could also be accommodated under the program on “Tailor-made Training and Study Tour” which would be implemented under the cost-recovery basis.

75. With regards to the program on “Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management”, the representative from the ASEAN Secretariat updated the Committee on the status of the proposal submitted to Islamic Development Bank (IDB) in 2007 for funding support, which was followed-up by the ASEAN Secretariat. The Committee was further informed that in 2009, IDB has already accepted the proposal in principle for 3-year duration and an approximate budget of USD 300,000. In this regard, the ASEAN Secretariat was requested to follow-up on the status of the proposal and the comments from IDB in order that the project proposal could be finalized by SEAFDEC in close consultation with the Member Countries.

76. With regards to the program on the “Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand”, the Committee noted that this program is proposed for funding support from the UNEP/GEF with SEAFDEC as an executing agency. Considering that there are several programs undertaken in the region on the issues of “fisheries *refugia*”, e.g. those supported by UNEP/GEF, SEAFDEC-Sida, and the pipeline program proposed for funding support from EU, the Committee suggested that the implementation of these activities should complement each other in order to facilitate the conservation and enhancement of the important ecosystems for fisheries.

VI. OUTCOMES OF THE SECOND MEETING OF THE REGIONAL ADVISORY COMMITTEE ON FISHERIES MANAGEMENT IN SOUTHEAST ASIA (RAC)

77. The Meeting was informed on the outcomes of the Second Meeting of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC), organized from 2 to 4 September 2009 in Bangkok, Thailand, where recommendations were made on several priority fisheries management issues, particularly in Enhancing Sustainability of Fishery Resources and Stocks, and Improving Data and Information Collection on Fishing Vessel Record and Catch Documentation Scheme (**Annex 10**).

78. With regards to the recommendation made by RAC on the organization of Technical Working Groups (TWGs) or technical consultations to discuss and elaborate on the relevant issues and follow-up on the recommendations made by RAC, the Committee suggested that the SEAFDEC Secretariat should coordinate the recommendations made by RAC on the organization of the TWGs. Experts from the Member Countries could also provide inputs for the issues and concerns to be discussed during the annual meetings of the RAC.



79. On the recommendation of RAC for improving the use of data and information to support fisheries management, the Committee also requested SEAFDEC to consolidate the data and information derived from various projects implemented by SEAFDEC and come up with compilations, *e.g.* on the status of resources, management measures to mitigate the depletion of resources, which could also be used as inputs to the annual meetings of RAC.

80. While noting that the directives given by the SEAFDEC Council on the need to streamline the working mechanisms of the Program Committee and RAC, the Committee agreed that the recommendations from the RAC meetings could be provided in advance to be used as inputs during the Program Committee Meeting in order that the issues identified by RAC could also be incorporated into the SEAFDEC programs. In addition, since the recommendations from RAC would also be reported to the SEAFDEC Council, the Council may subsequently provide directives on the programs of activities to be further taken up by the Program Committee.

VII. COOPERATION WITH DONORS, NON-MEMBER GOVERNMENTS AND INTERNATIONAL/REGIONAL ORGANIZATIONS

81. While expressing his appreciation to SEAFDEC for the invitation extended to FAO/RAP to attend this Program Committee Meeting, the representative from the FAO/RAP congratulated SEAFDEC for the implementation of activities to promote sustainable development of fisheries in the Southeast Asian region. He informed the Committee on the wide range of FAO programs on fisheries and aquaculture, of which certain linkages could be made with the SEAFDEC program of activities. The activities of FAO in principle fall under the broad framework of the Code of Conduct for Responsible Fisheries (CCRF), particularly in the ecosystem approach to fisheries and the integrated management with focus being placed on all important aspects of the ecosystem and different activities that impact humans, the habitats as well as the fisheries resources and the ecosystems. He also informed the Meeting that FAO is now combining the field programs with the normative types of activities, and currently the thematic areas of FAO activities are focused cross-cutting issues, namely information management and statistics, fisheries economics, policy and liaison, fisheries industry and utilization, fishery industry and technology, fishery resources management, and aquaculture resources management. FAO has also implemented a number of non-regular programs, *i.e.* the FISHCODE program and the working group to address the particular issues of emergencies. For the global normative works and processes, of which FAO is heavily working on, the works include those undertaken under the Committee on Fisheries (COFI), and the related sub-committees on trade and aquaculture. In addition, FAO is strategically looking toward the strengthening of fisheries management in two sub-regions, namely the Bay of Bengal and the South China Sea of which the certain areas overlapped with the areas of activities of SEAFDEC.

82. He then delineated the collaborative activities between SEAFDEC and FAO, particularly considering that SEAFDEC is one of the partner organizations of the Asia Pacific Fisheries Commission (APFIC). FAO is also looking forward to collaborating with SEAFDEC on the Ecosystem Approach to Fisheries in the areas of competence of SEAFDEC with the Bay of Bengal Large Marine Ecosystem (BOBLME), the program on management and reduction of by-catch, the FAO-Sida Global Program, as well as country projects under bilateral cooperation between FAO and various Southeast Asian countries. In addition, the FAO Regional Technical Cooperation Programme has also been established to address the issue on tuna post-harvest improvement, improving use of feeds in cage aquaculture, and microfinance in inland fisheries. In concluding his remarks, FAO looks forward to regional cooperation with international/regional organizations including SEAFDEC for sustainable development of fisheries in the region.

83. In response to the request of the Committee for FAO to provide advice and support for the EU Catch Certifications and on the US regulation on the elimination of IUU fishing, the representative from FAO informed the Committee that under the APFIC website, a communication forum has been provided to facilitate interactive discussions on the relevant

issues. In addition, relevant information from the Member Countries could also be shared with all concerned through this website. FAO is also identifying the issues relevant to small-scale fisheries and is planning to convene an awareness raising forum and consultation on EU Catch Certifications and implications to small-scale fisheries in early 2010 in Bangkok, Thailand. In this connection, FAO/RAP would consult with SEAFDEC on how the Member Countries could be involved in the consultation. His presentation appears as **Annex 11**.

84. The representative from the ASEAN Secretariat congratulated SEAFDEC for the good progress and achievements resulted from its Program of Activities in 2009. He recalled that the ASEAN-SEAFDEC Strategic Partnership started as a “Collaborative Projects Mechanism” which generated into a “Strategic Partnership.” He also provided an overview of the ASEAN Community building process and the ASEAN-SEAFDEC Strategic Partnership (ASSP). He commended with appreciation the involvement of SEAFDEC in the ASEAN cooperation process in 2008-2009 particularly in the implementation of the ASEAN Integrated Food Security (AIFS) Framework, and the development of the ASEAN Multi-sectoral Framework on Climate Change: Agriculture and Forestry (AFCC). He outlined the future perspectives of ASSP, which will contribute to closer cooperation between the two organizations and beyond. These include support to the ASEAN Community Building by 2015, consideration for strengthening the ASSP Programme (through adoption of holistic approach to project cycle management and monitoring and evaluation as well as results-based reporting), engaging in the implementation of AIFS Framework and AFCC, and preparation and conduct of the “Fish for the People 2020” Conference. He also emphasized the need for continuation of the activities under the FCG-ASSP and wished SEAFDEC a greater success in its future undertaking. His statement appears as **Annex 12**.

85. The representative from the Colombo Plan Secretariat expressed his appreciation to SEAFDEC for inviting the Colombo Plan Secretariat to participate in this Program Committee Meeting. He presented a brief introduction on the Colombo Plan which was established since 1951 as an international organization. The Member Countries of Colombo Plan have also been expanded from seven to 26, countries. The objectives of the Colombo Plan are to: 1) promote technical cooperation and assist in the sharing and transfer of technology among the Member Countries, 2) keep under review relevant information on technical cooperation between the member governments, multilateral and other agencies with a view of accelerating development through cooperative effort, and iii) facilitate the transfer and sharing of the developmental experiences. The Colombo Plan currently has four permanent programs, namely: i) Drug Advisory Programme (DAP), ii) Programme for Private Sector Development (PPSD), iii) Public Administration & Environment (PPA/ENV), and iv) Long-Term Scholarship Programme (LTSP).

86. The Colombo Plan Secretariat had been collaborating with SEAFDEC since 1995, through the participation of Colombo Plan Member Countries in the SEAFDEC fisheries development programs. He expressed his willingness to take the opportunity of this Meeting to reactivate the collaboration between the Colombo Plan Secretariat and SEAFDEC, of which the areas of collaboration could fall under the scopes on market oriented or policy oriented training programs, and those in the spirit of South-South Cooperation, *i.e.* development of collaborative training programs, of which the detailed collaboration could be further discussed and elaborated. His presentation appears as **Annex 13**.

VIII. RECOMMENDATIONS OF THE THIRTY-SECOND MEETING OF THE PROGRAM COMMITTEE

8.1 Adoption of Report of the Meeting

87. The Committee adopted the report of the Thirty-second Meeting of the SEAFDEC Program Committee on 18 November 2009. The Meeting also took note that the Report would be



further submitted to the 42nd Meeting of SEAFDEC Council and to ASEAN through the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP), respectively.

8.2 Date and Venue of the Thirty-Third Meeting of the Program Committee

88. The Chief of TD expressed his Department's willingness to host the Thirty-Third Meeting of the Program Committee in Thailand. TD would further coordinate with the Secretariat in finalizing the schedule and related arrangements for the Meeting including the date and venue of the Meeting.

IX. CLOSING OF THE MEETING

89. Dr. Chumnarn Pongsri expressed his appreciation to the Program Committee Members as well as other participants of the Meeting for their active participation and deliberation on the SEAFDEC programs as well as other program matters, which allowed the Meeting to come up with fruitful outcomes. He then assured to the Committee that SEAFDEC would do its best in rendering supports to sustainable development of fisheries for food security of the people in the region through its programs and activities, and declared the Meeting closed. His closing statement appears as **Annex 14**.

Annex 1

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OPENING REMARKS

By Dr. Chumnarn Pongsri, SEAFDEC Secretary-General

Distinguished Members of the SEAFDEC Program Committee,
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Representatives from our Collaborating Partners,
Ladies and Gentlemen, Good Morning!

Being a new member of the SEAFDEC family, it is indeed with much pleasure that I welcome you all to the Thirty-second Meeting of the SEAFDEC Program Committee. Allow me also to thank MFRDMD for hosting this Program Committee Meeting in this fascinating city of Kota Kinabalu, and also for the arrangements of this Meeting.

The three days ahead would be quite busy for all of us considering the number of matters and issues to be addressed as outlined in the Meeting Agenda. Aside from reviewing the results of program implementation in 2009, we also need to discuss and scrutinize the proposed programs of activity for 2010 in order to ensure that such programs continue to address the needs of the Member Countries. The views and inputs from the members of the Program Committee as well as those of our collaborating partners would be very much welcome during our deliberations. Moreover, the outlook of the Japanese Trust Fund for 2009 and 2010 which will be presented during this Meeting, would give us the insights into the financial aspects of our projects and activities.

During our three-day Meeting, we also need to discuss the progress of our proposal to organize the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020. Picking up on what the Thirty-First Meeting of the Program Committee had initiated, I am pleased to inform you that the proposal has already undergone scrutiny especially from the ASEAN side. As what I have told the Conference Organizing Committee during our meeting yesterday, we have already received positive signal from the SOM-AMAF few days ago during their meetings in Brunei Darussalam. The details of the discussions from yesterday's Organizing Committee Meeting would be presented during the later part of our three-day Meeting.

Furthermore, we would also provide information to this Meeting on the outcome of the Second Meeting of the Regional Advisory Committee (RAC) on Fisheries Management in Southeast Asia which was held in Bangkok in September 2009. The second RAC Meeting discussed many issues specifically on the need to assess the current level of fishing capacity in our region's marine waters as well as on the need to enhance the fishery resources for the sustainability of the fisheries sector as a contributor to food security. The members of the Program Committee could therefore explore the linkage between the issues raised during the RAC meetings and the SEAFDEC programs discussed at the Program Committee meetings.

Since the Program Committee is a subsidiary body of the SEAFDEC Council, our recommendations would be submitted to the SEAFDEC Council while the specific programs covered by the FCG-ASSP collaborative mechanism would be submitted to the FCG-ASSP Meeting which will be convened after this Meeting and later to the higher authorities of the ASEAN, for consideration and endorsement. Considering such onward actions that the Committee has to undertake, your full cooperation is of utmost importance so that we could come up with relevant recommendations on the programs and activities that SEAFDEC would undertake for the benefit our fishers in this region. With that note, Ladies and Gentlemen, I now declare the 32nd Meeting of the Program Committee open. Thank you and good day!

AGENDA

- Agenda 1:** Opening of the Meeting
- Agenda 2:** Adoption of Agenda and Arrangement of the Meeting
- Agenda 3:** Review of SEAFDEC Program Implementation for the Year 2009 and Proposed Programs for the Year 2010

3.1 Departmental Programs⁵

3.1.1 Secretariat

- Center-wide Information Network

3.1.2 Training Department

- Information and Communications Technology
- Tailor Made Training and Study Tour

3.1.3 Aquaculture Department

- Integrated Mollusk Production
- Shrimp and Mud Crab Domestication Program
- Marine Fish Program
- Small-holder Freshwater Aquaculture Program
- Seaweed Strain Improvement
- Aquatic Ecology

3.2 Programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism

3.2.1 Secretariat

- Support to the Implementation of the Code of Conduct for Responsible Fisheries
- Assistance of Capacity Building in the Region to Address International Trade Related Issues
- Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region
- Environmental Related Tasks in Southeast Asia
- Support to Tsunami Rehabilitation of Affected Countries (Proposed New Title: Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea")
- Promotion of "One Village, One Fisheries Products (FOVOP)" System to Improve the Livelihood for the Fisheries Communities in ASEAN Region
- Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region
- Information Collection of Highly Migratory Species in Southeast Asia Waters

⁵ Marine Fisheries Research Department (MFRD) and Marine Fishery Resources Development and Management Department (MFRDMD) have no Departmental Programs.



- ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 (NEW)

3.2.2 Training Department

- Responsible Fishing Technologies and Practices (Fishing in Harmony with Nature)
- Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses
- Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty
- Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2
- Deep Sea Fisheries Resources Exploration in the Southeast Asia
- Development of Regional Database for Fishery Management
- Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management
- Rehabilitation of fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement (NEW)

3.2.3 Marine Fisheries Research Department

- Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries
- Chemical and Drug Residues in Fish and Fish Products in Southeast Asia (“Biotoxin Monitoring”⁶)
- Traceability Systems for Aquaculture Products in Southeast Asian Region (NEW)

3.2.4 Aquaculture Department

- Development of Technologies and Human Capacity Building for Sustainable Aquaculture
- Establishment of Disease Surveillance System of Aquatic Animals
- Research and Development (R&D) of Stock Enhancement for Species under International Concerns
- Promotion of Sustainable and Region-oriented Aquaculture (NEW)
- Resource Enhancement of International Threatened and Over-Exploited Species in Southeast Asia through Stock Release (NEW)
- Accelerating Awareness and Capacity-building in Fish Health Management in Southeast Asia (NEW)
- Food Safety of Aquaculture Products in Southeast Asia (NEW)

3.2.5 Marine Fishery Resources Development and Management Department

- Research for Stock Enhancement of Sea Turtles
- Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea
- Research and Management of Sea Turtles in Foraging Habitat in the Southeast Asia Waters (NEW)

⁶ From 2010, the project will focus on the “Biotoxin Monitoring”

3.2.6 Non-funded FCG/ASSP Programs

- Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement
- The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region
- Development of Integrated Inland Fisheries Management in ASEAN Countries
- Utilization of Freshwater Fish in ASEAN Member Countries
- Good Laboratory Quality Management in ASEAN Member Countries

3.3 Other Programs

- Promotion of Set-Net; an Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management
- Information Collection for Economical Important Species: as Surimi Raw Materials
- Cetacean Research in Southeast Asia Waters: Whale Sighting Program
- Promotion of Sustainable Freshwater Aquaculture for Rural Communities
- Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches

3.4 Outlook of Japanese Trust Fund for the year 2009 and 2010

3.5 Enhancing ASEAN Plus Three Cooperation in Fisheries

- Agenda 4:** Pipeline Projects and Emerging Needs for Preparation of Future Project Proposals
- Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management (SEC/IDB⁷)
 - Climate Change and Its Impacts on Fisheries and Aquaculture: Adaptation and Mitigation towards Food Security
 - Promoting Sustainable Food Production through Responsible Fishing Technologies and Practices
 - Strengthen Food Security Arrangements through Fisheries Intervention: Strengthening National and Local Governments in the Development of Food Security Programs/Initiatives
 - Safety at Sea for Small Fishing Boats
 - Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand
 - Improved Fisheries Management through an Ecosystem Approach to Fisheries by Development and Management of Refugia and Marine Protected Areas in the Eastern Gulf Of Thailand (Cambodia, Thailand and Vietnam)

- Agenda 5:** Outcomes of the 2nd Meeting of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC)

- Agenda 6:** Other Matters
- 6.1 FAO Global Program for Fisheries and Aquaculture
 - 6.2 Others

⁷ Islamic Development Bank



- Agenda 7:** Cooperation with Donors, Non-Member Government and International/ Regional Organizations
- Agenda 8:** Recommendations of the 32nd Meeting of the Program Committee
8.1 Adoption of Report of the Meeting
8.2 Date and Venue of the 33rd Meeting of the Program Committee
- Agenda 9:** Closing of the Meeting

**SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITIES
FOR THE YEAR 2009-2010**

INTRODUCTION

SEAFDEC Departmental Programs for the Year 2009-2010 are listed below and proposed activities which detailed of their projects appears in *Appendix 1*, *Appendix 2* and *Appendix 3*.

Program Title	Responsible Department	2009	2010
Center-wide Information Network	SEC	Y	Y
Information and Communication Technology	TD	Y	Y
Tailor Made Training and Study Tour	TD	Y	Y
Integrated Mollusk Production	AQD	Y	Y
Mud crab and Shrimp Domestication	AQD	Y	Y
Marine Fish	AQD	Y	Y
Small-holder Freshwater Aquaculture	AQD	Y	Y
Seaweed Strain Improvement	AQD	Y	Y
Aquatic Ecology	AQD	Y	Y

**SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITIES
FOR THE YEAR 2009-2010**

THE SECRETARIAT

Program Category: Departmental Program
 Program Title: Center-wide Information Network
 Responsible Department: SEAFDEC Secretariat
 Total Duration: Since 1998

1. INTRODUCTION

Considering the vital role of information as a tool in the development and management of the fisheries sector, a program on Center-wide Information Network was initiated and adopted by the Council of SEAFDEC in 1998. Since then, based on SEAFDEC Information and Communication Policies, the Secretariat has developed several information and statistics programs and services to support management and development of sustainable fisheries in the region. In addition, during its 38th Meeting, the SEAFDEC Council endorsed the Information Strategies for Enhancing SEAFDEC Visibility and Communication which is envisaged to streamline information activities in a more cost-effective manner, and enhance visibility of the organization. Framework and activities under the Program therefore has been adjusted to be in-line with the Information Strategy.

2. PROGRAM

The Program on Center-wide Information Network aims at keeping the Member Countries, other organizations and public well informed of SEAFDEC activities; raising public awareness and visibility of SEAFDEC; and providing various forms of fisheries information to support decision-making, management and development of fisheries sector. In order to achieve the objectives, the Program aims to produce materials to promote activities and visibility of the Center, enhance communication among the SEAFDEC staff and communication with the Member Countries and other organizations, as well as providing HRD opportunities for the relevant SEAFDEC staff in order to improve the activities.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Information-related activities undertaken by the Secretariat in collaboration with all SEAFDEC Departments during the year 2009 under the Center-wide Information Network framework are as follows:

Project/Activity Title	Duration	Remarks
Production and dissemination of reports of SEAFDEC annual meetings		
• Report of the 31 st SEAFDEC Program Committee Meeting	Q1	100%
• Report of the 11 th ASEAN-SEAFDEC FCG Meeting	Q1	100%
• Report of the 41 st SEAFDEC Council Meeting	Q2	100%
Production and dissemination of Annual Report 2008 SEAFDEC Annual Report publishes highlighted activities and achievement of SEAFDEC during the annual working cycle. Number of production is 1,000 copies, distributed to Member Countries, Network Libraries, fisheries-related institutions/organizations, collaboration organizations, and interested people.	Q1-2	100%

<p>Information Compilation CD-ROM 2008 During the 39th SEAFDEC Council Meeting in 2007, the Council requested that the information/technical materials published by SEAFDEC during the whole year period should be provided to the Member Countries for their information and usage. SEAFDEC since has therefore annually prepared the CD-ROM containing the information/technical materials published by SEAFDEC and provide to the SEAFDEC Council during the SEAFDEC annual Council Meeting.</p>	<p>Q1</p>	<p>100%</p>
<p>Production and dissemination of Newsletter Volume 31 Number 4 and Volume 32 Number 1-3 SEAFDEC Newsletter publishes activities of SEAFDEC in promoting fisheries development in Southeast Asia, with inputs from all SEAFDEC Departments and Member Countries (if any). Current production is 1,600 copies, distributed to Member Countries, Network Libraries, fisheries-related institutions/organizations, collaboration organizations, and interested people. Newsletter is also available through SEAFDEC Integrated Website. In addition to the English version, approx 200 copies of Japanese version Newsletter were also produced for distribution in Japan.</p>	<p>Q1, Q2, Q3, Q4</p>	<p>75% <i>(Volume 32 Number 3 is now under compilation process)</i></p>
<p>Production and dissemination of Special Publication “Fish for the People” Volume 7, Number 1-3 The Special Publication will be in easy reading style, targeting not only the technical people but also the non-technical including policy makers, young scientists and managers and others who are interested in the fisheries issues in ASEAN region. Number of production is 1,300 copies for Number 1 and 1,500 for number 2 and 3. The Special Publication is available through SEAFDEC Integrated Website.</p>	<p>Q2, Q3, Q4</p>	<p>80% <i>(Volume 7 Number 3 is now under compilation process)</i></p>
<p>Fishery Statistical Bulletin for the South China Sea Area</p> <ul style="list-style-type: none"> • Production and dissemination of Statistical Bulletin for 2006 • Production and dissemination of Statistical Bulletin for 2007 • Development of Questionnaire and Note of Completion for the Fishery Statistical Bulletin 	<p>Q1 Q1-Q2</p>	<p>100% 90% 100%</p>
<p>Maintaining and improving of the Website</p> <ul style="list-style-type: none"> • SEAFDEC Integrated Homepage (www.seafdec.org) • Regional Website on Small-scale Fisheries (http://sea-ssf.net/) • Portal Website for the ASEAN-SEAFDEC Strategic Partnership (http://www.asspfisheries.net) 	<p>Q1-Q4</p>	<p>On-going On-going On-going</p>
<p>Other promotional activities</p> <ul style="list-style-type: none"> • SEAFDEC Information Catalogue 2009 • SEAFDEC Calendar 2009 	<p>Q1 Q2-Q3</p>	<p>100% 100%</p>
<p>Tenth SEAFDEC Information Staff Exchange Program Meeting The 10th ISEP was organized from 12-14 October 2009 hosted by TD. Main objectives of the 10th ISEP Meeting are: 1) To review the achievements and monitor the progress of implementation of SEAFDEC information activities, and the Information Strategy for Enhancing SEAFDEC Visibility and Communication in 2009; 2) To Review and make appropriate/necessary revision to the Information Strategy for Enhancing SEAFDEC Visibility and Communication; 3) To discuss and conclude activities to be incorporated under the Center-wide Information Network Program framework in 2010; 4) To discuss the new initiatives to be implemented to enhance the SEAFDEC Information activities and visibility; and 5) To introduce initiatives in information aspects undertaken by TD (as host</p>	<p>12-14 Oct</p>	<p>100%</p>

department) and exchange views among SEAFDEC information officers.		
<p>Regional Fisheries Policy Network (RFPN) In 2009, SEAFDEC Secretariat was stationed by Regional fisheries Policy Network (RFPN) comprises members from Indonesia, Malaysia, Myanmar, and Thailand (with support from Sida); and virtual members from Philippines and Singapore have also been designated by their respective countries. The main roles of the RFPN are to promote the formulation of regional fisheries policies and recommendations on the important regional fisheries-related issues. The RFPN also assist in coordination with Member Countries, and to promote closer collaboration between SEAFDEC and Member Countries.</p>	Q1-Q4	On-going

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

The Information activities proposed to be undertaken in the year 2010 are:

	Remarks
1. Production of SEAFDEC Annual Report 2009	1,000 copies
2. Information Compilation CD-ROM 2009	50 copies
3. Production of SEAFDEC Newsletter Vol. 32 No. 4, Volume 33 No.1-3	1,600 copies
4. Production of the reports of SEAFDEC Annual Meetings (PCM, FCG, Council)	150 copies each
5. Production of Special Publication: "Fish for the People" Vol. 8 No. 1-3	1,500 copies
6. SEAFDEC Information Catalogue 2010	1,000 copies
7. Developing and maintaining Websites <ul style="list-style-type: none"> • SEAFDEC Integrated Homepage • Regional Website on Small-scale Fisheries • ASSP Portal Website 	(web-based)
8. Production of SEAFDEC Calendar 2011	3,000 copies
9. Compilation and Production of Fishery Statistical Bulletin 2008 and 2009	400 copies each
10. Eleventh SEAFDEC Information Staff Exchange Program (ISEP) Meeting	
11. Production of other promotional materials <i>e.g.</i> brochures, posters, etc.	
12. Regional Fisheries Policy Network (RFPN)	based on availability of budget
13. Information activities and promotional materials for publicizing the ASEAN-SEAFDEC Conference 2011	
14. Production of SEAFDEC Introductory Video	

In addition, based on the discussion and recommendation at the 10th Meeting of the SEAFDEC Information Staff Exchange Program, additional activities would also be explored and may be accommodated under the Program on Center-wide Information Network, based on availability of budget:

Tentative Timeframe

Activity	J	F	M	A	M	J	J	A	S	O	N	D
1. Annual Report 2009												
2. Information Compilation CD Rom 09												
3. Newsletter (4 issues)												
4. 32 nd PCM Report												
5. 12 th FCG Report												
6. 42 nd Council Meeting Report												
7. Special Publication (3 issues)												
8. Information Catalogue 2010												
9. Developing and maintaining Websites												
10. SEAFDEC Calendar 2011												
11. Statistical Bulletin 2007 and 2008												
12. 11 th ISEP Meeting												
13. Other promotional materials/activities	Based on events/requirement											
14. Regional Fisheries Policy Network	Based on availability of budget											
15. Activities for Publicizing the ASEAN-SEAFDEC Conference 2011												
16. Production of SEAFDEC Introductory Video	To be confirmed											

SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITIES FOR THE YEAR 2009-2010

TRAINING DEPARTMENT

1. OVERALL REVIEW

In the year 2009, TD continues strengthens public relation TD organization and activities via multi channel as exhibition, souvenir, newspaper, newsletter and electronic newsletter. The several productions of promotion material and multimedia packages were produced and disseminated to worldwide. The technology media as website was used to promote TD activities and information online. The target audience and publicity was assessed TD information via Information and Communication Technology implementation. Moreover, TD organized more than 15 tailor-made training courses and study tour programs.

In the year 2010, TD continues to implement a program related to Information and Communication Technology under the Departmental program. However, some program activities will continues and some of them will adjust and modify. Under the program, the public relation promote TD activities still emphasize and implement. TD online, E-learning for pre-training course will be designed and implemented on TD webpage. TD will produce an electronic newsletter to disseminate the progress of TD activities and Advance Fisheries Technology Magazine to organization network and member. The production Multimedia Packages to support TD project and activities including server other department and SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020, Moreover, at least five tailor made training courses and study tour programs will be conducted in the year 2010, the training course and study tour program which event where all aspects are defined by the partner in consultation with the training partners. This includes the choice of subjects, duration, location, and the target group). Courses/programs can be constructed by combining existing training programs or a totally new topic will be developed.

2. LIST OF PROGRAMS/ACTIVITIES

1. Information and Communication Technology
 - Public Relation
 - Information and Communication Development
 - Development and Production Multimedia Packages
 - Collaboration between SEAFDEC and other international organizations
2. Tailor made Training and Study Tour Program
 - University Student training course 2009
 - A training course on skipper study and fishing vessels operation for Pramong Tinasulanon College
 - Other tailor made training and study tour programs

PROGRAM DOCUMENT

Program Category: Departmental Program
Program Title: Information and Communication Technology
Responsible Department: Training Department
Total Duration: 1 year (January-December 2010)

1. INTRODUCTION

Presently, Information Technology (IT) is essential for communication inside and outside the organization and worldwide. IT has been developed as a high technology to support the implementation of activities in the organization. Information and Communication Technology as information service, the Internet and multimedia in Training Department have to be developed and improved to support SEAFDEC and Training Department activities. Moreover, it is the channel to promote SEAFDEC visibility to worldwide.

2. PROGRAM

2.1 Objectives:

- 1) To manage and develop TD's information communication technology
- 2) To utilize and apply new technology for department
- 3) To collaborate and establish network with other related institutes/organizations
- 4) To promote role of TD and organization to worldwide

2.2 Program description:

In 2010, The Department will develop and carry out information activities such as compiling, designing, producing, disseminating, acquiring and exchanging of printed and non-printed information. Various databases and information files will be designed and compiled to serve as effective tools. The Department's website will be updated in time to present its activities worldwide. Moreover, SEAFDEC Public Relations will be emphasized and promoted via every channel to serve the department's strategy of enhancing the organization's visibility worldwide.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

In 2009, the Training Department continued to implement a project on Information and Communications Technology under the Departmental Program. The following activities were implemented:

3.1 Public Relations

To enhance SEAFDEC visibility, TD took part in a number of exhibitions relating to fisheries to present and promote SEAFDEC roles in sustainable fisheries development in the ASEAN region. More than 30,000 audiences visit TD booth. The exhibitions are:

Exhibition Title	Date
Children's Day Exhibition	10 January 2009
Exhibition on The Integrated Sea Farming Project	21 April 2009
Open house M.V.SEAFDEC2 at Indonesia	11-15 May 2009
National Fisheries Exhibition	3-11 July 2009

Moreover, this year, TD initiated Advance Fisheries Technology Magazine and distributed to publicity by hardcopy and e-newsletter. TD also produced Key chain and Polo-shirt to Public Relation an organization. An article focusing on fisheries was written and appeared in the column titled “Open fishery in the world” of local newspaper every month.

TD always extends a warm welcome to delegations and guests from Member Countries and other organizations. TD considers it as an important channel for public relations of SEAFDEC.

3.2 Information and Communication Technology Development

New TD website was designed and modified. The information database, data links, news and activities/events on TD website was updated in time. The Internet bandwidth was modified and developed to support intranet and internet network system in TD. Moreover, the electronic newsletters as TD activities, Advance Fisheries Technology were produced and distributed to TD network and worldwide. The wireless system was also constructed in TD for support the staffs and participant who attended in workshop and training course. Moreover, the new URL domain www.seafdec.or.th was planed and changed in November 2009.

3.3 Development and Production Multimedia Packages

Ten VCDs on training courses and meetings were also produced to promote TD organization and activities. Public Relations materials as well as bookmark, key chain and Polo-shirt were produced and disseminated to publication via exhibition, training course, seminar and workshop. Moreover, the production VCD on SEAFDEC organization and Training Department was planed for next year program. Ten technical publications and reports were printed and served as new information to develop capacity of those who are engaged in the fisheries field. They were distributed in all occasions to share and exchange information among fisheries related organizations and through networks.

Video production list

- 1) Video production: The Training Course on Coastal Fisheries Management (Sri-Lanka 3-22 March 2009)
- 2) Video production: To be the Leader in Sustainable Tropical Fisheries for the People
- 3) Video production: The Achievement of Fisheries Development in the Region through the JFT Support
- 4) Video production: Forty Years in Motion SEAFDEC and Fisheries Development in Southeast Asia
- 5) Video production: Save the World with SEAFDEC
- 6) Video production: The International Training Course on Coastal Fisheries Management for Fishery Manager(CFM)
- 7) Video production: A Short-term Training Course on Monitoring Control and Surveillance (MCS) Approaches and Activities in Thailand (From Bangladesh)
- 8) Video production: Short-term Training Course on Fishing Technology for University Student#47
- 9) Video production: Training Course on Coastal Fisheries Management and Extension Methodology for Thai Government Officer
- 10) Video production: Training Course on Coastal Fisheries Management for Thai Government Officer

List of Technical Publications and Reports

- 1) Preliminary Report on the Fishery Resources Exploration on the Continental Slopes in The Lingayen Gulf, the Philippines.
- 2) Report on the On-site Training for the Handling of Tuna on Board Handline Bancas
- 3) SEAFDEC 2008 Report of the Training Workshop on the Deep Sea Fishery Resources Exploration on the Continental Slopes in Southeast Asian Waters.
- 4) Report on the On-site Training for Introduction of C-Hook for Bottom Longline.

- 5) Bi-annual Project Progress Report of Integrated Coastal Resources Management in Sihanoukville (ICRM-SV) July-Dec. 2008
- 6) Report of Survey on Demersal Fishery Resources Living in Un-trawlable Area in Rakhine Fishing Ground of Myanmar by Bottom Vertical Longline during 23-30 January 2009
- 7) Fish Landing Data in October 2007-October 2009 in Prey Nop II Sihanoukville Cambodia
- 8) Cruise Report in Research Activity M.V. SEAFDEC 2 Cruise No. 29-2/2008, 4 June-5 July 2008, National Research Survey in the EEZ of Brunei Darussalam.
- 9) Report of End-of-Project Meeting of the Working Party on Information Collection for Economically Important Species as Surimi Raw Materials in the Southeast Asian Region.
- 10) Guideline on Eco-Labeling for the Canned Tuna Industry

3.4 Database Management

The database management on TD network was designed and created. The update and initiate new electronic mail group was conducted and created for establish strengthen TD network to promote TD activities.

3.5 Collaboration between SEAFDEC and Other International Organization

Production of illustration of Global fishing gear classification was implemented in collaboration with FAO. Moreover, the collaborative with FAO/UNEP/GEF on organize Inception Workshop on Strategies for Fisheries Bycatch Management was discussed and prepared. This workshop will be organized from 3 to 6 November 2009 at Training Department.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration
1) Public Relation <ul style="list-style-type: none"> • Exhibition • Public Relations of TD and SEAFDEC via newspaper 	Jan-Dec 10 Jan-Dec 10
2) Information and Communication Technology Development <ul style="list-style-type: none"> • FishWatch in Southeast Asia • E-learning for Pre-training course on CFM • Integrate TD website with World Small Scale Fisheries website 	Jan-Dec 10 Jan-May 10 Jan-Dec 10
3) Development and Production of Multimedia Packages <ul style="list-style-type: none"> • Production VCD on “Training department toward in the future” • Production short sport advertisement to promote SEAFDEC for the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 	Jan-Jun 10 Jan-Dec 10
4) Collaboration between SEAFDEC and other international organizations <ul style="list-style-type: none"> • Collaboration with Baird Publication and other institute/organization prepare the exhibition for SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 • Collaboration with KU and MI to maintenance and update World Small Scale Fisheries Congress website • Collaboration with FAO/UNEP/GEF implement REBYC 2 project 	Jan-Dec 10 Jan-Nov 10 Jan-Dec 10



4.2 Expected Outcomes

- 1) Roles of TD and SEAFDEC will be well known in publicity.
- 2) Information Communication Technology in TD will be developed and used to promote TD projects and support working in TD to enhance TD and SEAFDEC's visibility.
- 3) Collaboration between TD and other international organizations in information exchange and information technology such as website linkage and project implementation will be promoted.

PROGRAM DOCUMENT

Program Category: Departmental Program
Program Title: Tailor-made Training Courses and Study Tour Programs
Funding Agency: Partner organizations
Responsible Department: Training Department
Duration: 1 year (January-December 2010)

1. BACKGROUND/INTRODUCTION

It is well recognized that, if organizations are to survive and prosper in the modern world of rapid change, they need to be more flexible, faster-moving and faster-learning than before. Their ability to do this rests upon the abilities of their workforce to have these characteristics – hence the value of training. If individuals are able to learn, develop and change, then so can the organizations. Providing training for staff not only helps them develop their skills and knowledge, but it is also motivational and a building block to organizational success.

In each year TD has conducted several regional training courses, that are a channel to transfer activities outcomes and technology which are found out or developed by SEAFDEC to its Member Countries, therefore the participants will come home with knowledge about “how they learn and how they do in SEAFDEC/TD, Thailand”. However in recent years, SEAFDEC/TD has requested to conduct some tailor made courses and study tour programs that are a direct follow-up of its advisory activities with and for, organizations in this region. Such courses/programs are referred to as tailor-made courses/programs because they are set up at the request and need of the organizations, with this they can be enormous benefit in developing the capabilities of the workforce, training doesn't come cheaply. Training needs to be for the right people, it needs to be the right type/design of training and it needs to be at the right time. Due to this the participants background, work responsibilities, objectives and expectation to be able to do at the end of the training course/program will be used for the course designing, it is tailored to the specific training needs of the requesting organization's staff. The tailor-made training courses and study tour programs which are conducted by TD emphasize learning by doing, observing. This is an approach that relies heavily on the participants' active involvement. An important part of learning by doing and seeing are that lecturers act more often as facilitators than as teachers in the traditional sense. The course will not focus on the theory but more dealing with practical application.

2. OBJECTIVES

- 1) To provide a wide range of tailor-made training course and study tour programs in the field of fisheries and other relevance aspects at the national and international levels
- 2) To fully utilize the training facilities of the TD and make use of them for the Member Countries and the region
- 3) To raise fund which support from other donors/organizations

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Up to this month of October, 2009, there were about 15 tailors made training courses, study tour programs and practical training programs that conducted by TD. And there will be another two training courses that will be conducted in November of this year. There are the Individual Training Course on Tuna Long-line Fishing and the Short Term Training Course on Fishing Technology for Ubonrathchathani University. With this, there were about 218 participants completed (and/or going to be completed) on the tailor-made training courses at SEAFDEC/TD in the year of 2009. The tailor-made programs summaries are as follow:

- **A short-term training course on Monitoring Control and Surveillance (MCS) Approaches and Activities in Thailand.** The training course was designed for four participants of the Department of Fisheries, Bangladesh. The course was conducted from 2nd to 12nd February 2009. The course was focused upon the Monitoring Control and Surveillance (MCS) system approaches and appropriate procedures and methods as well as the lesson learnt from the approaches as well as the MCS models, orientation and other start-based packages to establish and implement MCS. The course was comprised of class lectures, field visits, including cruise/survey practiced.
- **A training course on Coastal Fisheries Management in Thailand.** The course was designed for 16 participants of the Department of Fisheries and Aquatic Resources and Ministry of Fisheries in Sri-Lanka. The course was conducted from 3th -22nd March 2009. The course focused upon the concepts and case studies of coastal and resource management, the approaches to work towards co-management, involving local communities and applying ecosystem principles to coastal fisheries management, code of conduct for responsible fisheries as well as exited selective fishing gears in Southeast Asia, applicability approaches on fishery extension concepts and methods. The training course was comprised of presentations, discussion, practical and visit to related places.
- **Short term training courses for University students.** There were two training courses on this title were held at SEAFDEC/TD, there were conducted from 24 March – 3 April (Batch-47), and 12-22 October, 2009 (Batch-48). The courses focused on the awareness raising and the understanding on Sustainable coastal fisheries management to the new generation as young university students. Courses were consisted of the presentation/discussion sessions and the ship board training. There were about 45 University students attended on each training course.
- **A training course on basic fishing gears construction.** This training course was designed for 2 officers from the Department of Fisheries/Thailand. The course was conducted for 2 months, started from 2nd April – 29th May 2009. The course content was focused on the material for fishing gears construction, knot, net repairing, as well as fishing gear construction such as collapsible crab trap, tuna long-line, Bottom vertical long line, gill net, trawl with JTED and TED, set-net and etc.
- **The training course on Coastal Fisheries Management and Extension Methodologies (in Thai).** This course was designed Thai extension officers (DOF). The course was conducted from 8-23 June 2009. There were about 16 days of the training duration. This course aim to familiarize participants in principles, concepts and need for radical change to coastal fisheries management and the role of fishing communities in the sustainable development and management of coastal resources. And to impart participants with the principles, concepts techniques and methodologies in extension, communication and media production. There were 24 of participants attended on this training course.
- **A training course on Coastal Fisheries Management through locally-base and co-management approaches.** This course was designed for Thai extension officers (DOF). The course was conducted from 20-31 July 2009. There were about 12 days of the training duration. The course focused on modern principles and concepts of coastal fisheries and resource management including the need to change coastal fisheries management towards locally base coastal resource management approaches, and effective tools and methods in order to assist the fishery officers on coastal fisheries management project planning and evaluation. The study trip was took places at many pilot projects which implemented under the DOF/Thailand at Trat, Phetchaburi, Prachu Kirikhan and Chumporn provinces. Due to this, participants had opportunity to learn from the experience and lesson learnt of the projects through the discussion with the project officers, local institutions and fishermen. There were 29 of participants attended on this training course.

- **A training course on fishing vessels operation for Pramong Tinasulanon Collage.** This four months and twenty days training course is designed for students from a fisheries collage. The aim of this tailor made training course is as being a part to produce the effective seamen and navigators for the fisheries industrial or other related sectors both at the national and international levels. The course is conducted from 6 October 2009 – 26 February 2010. There are 16 student attend on this training course for this batch.
- **An Individual Training on Tuna Long-line Fishing.** The course is designed for one participant of the Fishing Technology Division, Central Institute of Fisheries Technology, India. The course will be conducted from 3th -20th November 2009. The course focuses upon the tuna long line particularly on the small to medium sized tuna long-liners. The course will comprise of presentation/discussion, practical sessions: gear construction, baiting, hydro acoustic equipment operation as well as fishing operation. There are some related places that will be visited such as Phuket fishing port, private companies: for tuna baiting, tuna frozen and etc.
- **A short term training course on fishing technology for Ubonrathchathani University.** The course will be conducted from 26-30 November 2009. The course focuses on the offshore fisheries, oceanographic survey and the eco-friendly aquaculture. Students will learn on the responsible fishing gears designed and methods as well as to practice on the oceanographic survey. There will be 20 student attended on this training course.
- **On the practical training courses/On the job training.** There were 7 training courses that designed and conducted for University students in this year, the detail are as followed:

Course titles/areas	Name of University	Period	Number of participants
Practical Training course on Oceanographic research and survey	Rajamangala University of technology Srivijaya, Trang Campus	2-3 April 2009	3
Practical Training course on Oceanographic research and survey	Silpakorn University, Faculty of Food Technology	12 March - 22 April 2009	3
Practical training on International training courses conduction and extension work	Dhonburi Rajabhat University	16 March - 15 May 2009	1
Practical Training course on Oceanographic research and survey	Maejo University	20 March – 20 May 2009	2
Practical training course on Training courses conduction	King Mongkut’s Institute of Technology Ladkrabang Chumporn Campus	20 April - 15 May 2009	3
Practical Training course on Training courses conduction and extension work	Silpakorn University, Faculty of Food Technology	28 April - 29 May 2009	2
Practical Training course on Coastal Resource Management	Walailak University	2 September - 18 December 2009	2

4. PROPOSE FUTURE ACTIVITIES FOR THE YEAR 2010

At least five tailor made training courses and study tour programs will be conducted in the year 2010, the training course and study tour program which event where all aspects are defined by the partner in consultation with the training partners. This includes the choice of subjects, duration, location, and the target group). Courses/programs can be constructed by combining existing training programs or a totally new topic might be developed.

The following activities will be implemented in the year 2010:

Projects/Activities Title	Period												Remarks	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
1) University student training course 2010														
• University student training course' 49														
• University student training course' 50														
2) A training course on skipper study and fishing vessels operation for Pramong Tinasulanon College														5 months: From October 2010 – March 2011
3) Other tailor made training and study tour programs														
• Short-term Training program on Marine Fisheries Resource Surveys, stock assessment and co-management														
• Study tour on Tuna Long-line Multiday Boat Operation and Management														

Appendix 3 of Annex 4

**SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITIES
FOR THE YEAR 2009-2010**

AQUACULTURE DEPARTMENT

1. OVERALL REVIEW

In 2009, AQD continued implementing activities that would generate and transfer aquaculture technologies which are environment-friendly and suitable to the needs of the ASEAN region. These activities which are in line with the region's priority areas and based on the directives given by the SEAFDEC Council cover the following Departmental Programs: (i) Marine Fish; (ii) Mud Crab and Shrimp; (iii) Mollusk; (iv) Small-holder Freshwater Aquaculture (v) Seaweeds and (vi) Aquatic Ecology. These Programs have continued to generate aquaculture technologies that support sustainable development of the fisheries sector and help address the region's present and emerging issues on aquaculture.

The following are the highlights of the activities implemented under the various Programs:

a. Marine Fish

The Program aims to refine broodstock management, seed production, and grow-out technologies for marine fishes and promote marine fish hatcheries for livelihood in coastal areas. In 2009, the Program continued to address the remaining technology gaps for groupers, the Asian sea bass, mangrove red snapper, rabbitfish, milkfish, pompano, hybrid red tilapia and seahorse. These studies cover the various stages in culture involving broodstock, seed production, nursery and grow-out of marine fishes.

As part of the initiative to develop strategies to extend the spawning season of seabass in captivity, studies were continued to evaluate the effects of temperature on reproductive performance. Broodstock reared at elevated temperature (29-31 °C) had higher percentage of mature fish than those maintained at ambient temperature. In another experiment, results obtained in 2008 indicated that the insulin-like growth factor II (IGF-II) mRNA could be used as a good molecular marker for egg quality in marine fishes. During 2009, the development of a non-invasive, simple, and rapid assay utilizing the IGF-II mRNA expression as marker for egg quality in grouper and siganid was initiated.

Studies were also continued to improve the seed production techniques of marine fishes. The strategies used were the feeding of diets fortified with fatty acids and vitamins to the broodstock or supplementing feeds with vitamins and fatty acid mix in capsule form, the early introduction of SEAFDEC larval diet and the enrichment of rotifers with SEAFDEC formulated enrichment media. Results showed that the early introduction of larval diet and emulsion to enrich the rotifer reduced the incidence of abnormal larvae.

Potential substitutes for brine shrimp (*e.g.* copepods, shrimp mysids) and for trash fish were continued to be explored and tested for carnivorous marine fishes. Mysid was found to be a good live food substitute for *Artemia* in grouper larval culture. During 2009, the development of technique for mass production of this organism was initiated. With regard to seabass, studies were conducted to investigate the use of PUFA-rich thraustochytrids as enrichment diet for live foods (rotifer and *Artemia*) during larval rearing.

During nursery rearing, the benefits of diets supplemented with tryptophan and ginger in terms of improving the growth and survival and resistance to disease of marine fish juveniles were observed. Thus, experiments were conducted to study the effects of supplementation of

tryptophan and ginger in formulated diets for grouper and seabass in nursery cages in brackishwater ponds. Initial results showed that supplementation of formulated diets with ginger only or tryptophan and ginger enhanced the immune response of seabass juveniles. In siganids, the possibility of inclusion of more plant protein sources in the practical feed was also observed.

Experiments on the application of compensatory growth mechanisms for milkfish reared in tanks found that the alternate 2 week starvation and re-feeding cycle might work. The growth of milkfish fed a ration of 10% or 7.5% body weight was investigated and it showed that growth was not affected by reduction of ratio to 7.5% of average body weight. Another experiment was conducted to assess the effects of different feeding regimes on growth of milkfish in a simulated cage environment. The finding was that prolonging the starvation period to 3 weeks did not enhance the compensatory growth response.

The evaluation of SEAFDEC formulated diet for various marine fishes grown in brackishwater ponds was continued. Various verification studies conducted continued to show that SEAFDEC diets were consistently comparable if not better than the commercial diet.

In finding alternatives to fish meal in aquaculture feed, white cowpea at 20% replacement of fish meal in diets of grouper was further evaluated. Results based on body weight gain, survival and FCR were comparable with those obtained from a fish meal based diet. In grouper, immunostimulants such as ginger, onion, ascorbic acid, and beta-glucan were tested to improve the general health status of the fish and resistance to diseases.

b. Mud Crab and Shrimp

The Program aims to develop viable technology for the production of good quality seed and captive broodstock of native species, particularly, *P. monodon*, *P. indicus* and *P. merguensis* for shrimps and *Scylla* spp. for crabs.

Concerning the mud crab, studies were continued to domesticate, refine the broodstock management, seed production, and culture techniques for nursery, grow-out and fattening phases in different production systems. Wild stocks from various Philippine sites (Cagayan, Northern Samar, Camarines Norte and Surigao del Norte) were analyzed for genetic variation and it showed that genetic variability between populations were not significantly different. Experiments were also initiated to examine the growth and reproduction performance of progeny of these stocks. As part of the effort to improve the seed production technique, the embryonic development of the various *Scylla* spp used for seed production was compared. Since mud crabs exhibit cannibalism and are heavily dependent on trash fish, studies were continued to develop the practical feed for its grow-out culture and explore alternative protein sources. The effects of different levels of tryptophan incorporated in the mud crab diet were also tested. Results showed that aggressive behavior was suppressed and survival rates were significantly higher among those fed diet with tryptophan after 15 days culture. As part of the strategy to enhance technology adoption, a project was continued in Northern Samar to improve the capacity of various stakeholder groups on nursery and grow-out rearing, assess the status of wild stocks and socio-economic impact of adoption of mud crab technology in fisherfolk communities.

With regard to shrimps, the Program continued developing the technology to produce viable *P. monodon* and *P. indicus/P. merguensis* broodstock in captivity. In the Philippines, *P. monodon* broodstocks from the wild were examined to assess their genetic variation. To improve the maturation of pond-reared broodstocks the use of annelid meal as substitute for shrimp meal, fish meal and squid meal in shrimp feeds were further explored and evaluated. Experiment was also continued to assess the reproductive performance of pond-sourced *P. monodon* adults fed natural and artificial diets in floating cages.

c. Mollusk

The program's focus is on donkey's ear abalone, *Haliotis asinina* and this aimed at addressing the following objectives: (1) refine management and spawning techniques for captive broodstock, (2) improve seed production technology through environment manipulations and enhancement of growth of natural food; (3) determine the nutritional requirements of juveniles in line with the strategy to develop alternative feeds for nursery and grow-out; (4) compare the economic viability of producing advanced juveniles in tanks and sea cages set in open waters; and (5) develop viable technology package for the intermediate nursery culture and marketable abalone production.

The settlement (3.5%) and survival (0.3-1%) of postlarvae are considered the bottlenecks of abalone seed production. Hence, an experiment was conducted to isolate and cultivate the diatom, *Cocconeis* sp. for better settlement, growth and survival of post larval abalone. During 2009, the study was able to isolate two strains of *Cocconeis* sp. and also identified the culture requirements (light and nutrients) for mass production

Experiments were also continued to refine the hatchery and transport techniques for the donkey's ear abalone. Results showed that postlarvae transported at a density of 25,000 larvae/liter for up to 9 hours had the highest settlement rate (3.87%). Lowest settlement rate was observed in the group with loading density of 100,000 larvae/liter transported for 9 hours. Percent settlement tended to decrease when transport time was extended to 18 hours. Results on the optimum transit time and loading density of veliger larvae can be applied when transporting larvae to distant places.

To improve the production of abalone juveniles, experiments were also conducted on nursery rearing and culture of tropical abalone in plastic trays. The study was able to shorten the nursery rearing cycle by using smaller juveniles during stocking. Acceptable growth was also obtained using the cheaper plastic trays. Long-line culture also proved to be better than using floating rafts.

The culture of abalone to marketable size takes approximately 9 months; hence, the slow growth during grow-out rearing is one constraint that is being addressed by the Program. There is therefore a need to study the nutritional requirement of abalone and develop diet that will improve the growth of abalone and will replace the limited amount of seaweeds. Thus, experiments were continued to identify the lipid and essential fatty acid requirements of juvenile abalones. Highest weight gain was attained with essential fatty acid supplementation of 1.6%. Results of this study will assist in the improvement and production of a cost effective feed formulation for juvenile abalone.

Experimental trials on hybridization of Philippine native abalone species were done as part of the strategy to improve stocks and enhance its market potentials. In 2009, the study was able to produce two hybrid abalones (*H. asinina* x *H. glabra*; *H. asinina* x *H. planate*) which exhibit better growth, settlement and survival rates. F1 generations of hybrid stocks are now being reared for grow-out testing.

d. Small-holder Freshwater Aquaculture

The Program aims to improve the seed production and grow-out technologies for tilapia, catfishes, carps, and freshwater prawn and promote freshwater aquaculture for livelihood. Concerning the domestication of indigenous freshwater prawn species, activities were continued to assess the wild stocks in terms of their breeding and reproduction performance (including the seed production and larval rearing requirements). It was found that the duration of *M. wallacea* metamorphosis from hatchlings to postlarvae was reduced from 50 days to 36 days in subsequent larval rearing cycles using the greenwater method.

With regard to rearing of bighead carps in Laguna de Bay, experiments showed that the ideal stocking densities for bighead carp fry in lake-based cages during warm and cold seasons were

300 fry/m² and 200fry/m², respectively. Trial runs were also conducted to verify the technology for the production of advanced bighead carp fingerlings in lake-based fishpen. Concerning the tilapias, trials were conducted to verify the modified system of intensive tilapia culture in cages in Laguna de Bay. Another trial run was also conducted in Iloilo for the mass production of tilapia using the sex reversal methods. Meanwhile, a collaborative study on Nile tilapia reared in cages in the lake (Lake Bato) further assessed the effect of modified culture strategy of alternate feeding on the growth and survival performance of tilapia. Studies were also continued on important indigenous species (climbing perch, silver therapon and Manila catfish) to investigate their reproductive biology and evaluate their growth performance in tanks and lake-based net cages using farm-based feeds and commercial feed.

e. Seaweed

The Program focuses on production of ‘new’ and improved varieties of *Kappaphycus* through tissue culture and, sporulation techniques. Successful techniques were developed in regenerating the young plants of *Kappaphycus* from spores and through tissue culture. *Kappaphycus* were outplanted in tanks and in open waters to attain sufficient biomass for nursery rearing. The original plants grown on two lines attained a daily growth rate of 2.8-3.4%/day and these were expanded to 13 lines after 42 days of culture. Several plants ready for outplantation are presently stocked at the land-based nursery tanks.

Sporelings from carposporophyte and tetrasporophyte plants from farmed and wild *Kappaphycus* proved to be good sources of ‘new’ cultivars. Important characteristics of ‘new’ plants vs. the commercially farmed *Kappaphycus* were compared and the former were found to show better adaptation to adverse environmental conditions. Comparison of carageenan properties is being done.

f. Aquatic Ecology

The Program aims to generate aquaculture technologies with the least possible negative impact on the environment. AQD has implemented studies to monitor the impacts of aquaculture activities on the environment, and establish information on interactions and the balance between the farmed species and natural diversities. Activities were also initiated to develop sediment quality assessment and monitoring protocols in mariculture areas. Results of continuous monitoring of water and sediment quality at Igang Mariculture Park indicated that the carrying capacity of the site has not yet been reached. Another experiment done during the year was on the assessment of the ammonium uptake of *Gracilaria bailinae* and its impact on the combined culture with abalone, and *G. bailinae* in a recirculating system.

g. Other R&D Activities

Institutional Capacity Development on Sustainable Aquaculture (ICDSA). The ICDSA which is being implemented in partnerships with the local government unit, donor communities, fisherfolks/farmers and other stakeholder groups provides a mechanism for the assessment of socioeconomic and environmental impacts of AQD aquaculture technologies and, for building the capacity of beneficiary communities.

In 2009, the project went full swing in its activities in five Philippine provinces (Antique, Capiz, Guimaras, Northern Samar, and Misamis Occidental). Several season long training courses and actual production and demonstration runs for the farming of important commodities (*i.e.* seabass, grouper, milkfish, mud crab, abalone, freshwater fishes) were conducted in these sites. In Samar, training courses on mud crab nursery and grow-out for small-scale fishers and demonstration runs for the grow-out phase and stock assessment of mudcrab seedstock were completed. In Capiz province, after the season long training courses on brackishwater and freshwater aquaculture, at least 50% of the former trainees have ventured into tilapia farming and/or hired by private sector. In Guimaras, the project had completed the training and farm demonstration of milkfish cage

culture for fisherfolk communities. The socio-economic impacts and enterprise development of milkfish culture for small-scale fishers have also been initiated. In Misamis Occidental, the season-long training and farm demonstration runs on grouper cage culture were conducted for fisherfolk communities and cooperative farmers. Research was also started for the rapid assessment of socio-economic conditions of beneficiaries of grouper cage culture and resource assessment in grouper cage sites. Moreover, AQD participated in the preparation of a 4-year proposal for the grouper industry development in Misamis Occidental and the mud crab project in Northern Samar.

ABOT AquaNegosyo. Apart from ICDSA, the ABOT (Agree-Build-Operate-Transfer) AquaNegosyo is another mechanism that facilitates the transfer of viable aquaculture technologies to AQD's targeted clients. ABOT showcases the complete packages on AQD's viable aquaculture technologies for private sector investors and aquaculture farmers in the Philippines. As of September 2009, ABOT has extended technical assistance to 21 clients (private entrepreneurs, commercial farmers from the Philippines) and has generated a gross income of PhP1.2 million (US\$ 25,742.00). Technical assistance rendered were farm site and culture system assessment, preparation of facility design and project feasibility, supervision of facility construction, transport & stocking of fish, and monitoring of culture system and stocks.

Training and Information. As of September 2009, AQD conducted 11 formal training programs on various aspects of aquaculture and has trained 322 participants, mainly government workers, private sector practitioners, fisherfolk and farmer communities from the Philippines and representatives of partner countries from the ASEAN region. Apart from this, 179 students, mainly from the Philippines, and some foreign interns have also been trained during the year.

To enhance visibility locally and internationally and disseminate viable technologies, AQD participated in five exhibits/fairs in the Philippines. Apart from publication in peer-reviewed journals, it also published books on Rural Aquaculture and experiences on fishing communities (Malalison experience) for extension and development workers, manuals and other information materials about AQD. AQD also conducted in-house workshop for writing of books on aquaculture science, socio-economics and policy. Significant efforts were also made in improving AQD's website.

2. PLANS IN 2010

R&D Activities that will be implemented in 2010 are based on the strategic plans identified during AQD's in-house planning workshops held in 2007, 2008 and 2009.

The year 2010 will see the continuation of most of the activities implemented in 2009. AQD will address the remaining technology gaps identified for various aquaculture commodities. This will also include putting in high 'gear' the activities that will ensure adoption and uptake of AQD's viable aquaculture technologies by its targeted clients. The ICDSA initiative, ABOT AquaNegosyo, and AQD's training and information activities are expected to play a more active role in this aspect.

To help address the emerging issues on fisheries sustainability and food security and to ensure continued relevance of AQD's work in the region, AQD and its co-organizers will convene in 2010 the regional technical consultation on aquaculture. This technical consultation will provide a forum to discuss the strategies for further development of sustainable aquaculture of the Member Countries in the next decade.

The Departmental Programs for 2010 will comprise the following: (i) Marine Fish; (ii) Mud Crab and Shrimp; (iii) Mollusk; (iv) Seaweed; (v) Small holder Freshwater Aquaculture; and (vi) Aquatic Ecology.



3. LIST OF PROGRAMS

Departmental Programs Implemented by AQD in the year 2009

- 1) Marine Fish
- 2) Mud Crab and Shrimp
- 3) Mollusk
- 4) Small-holder Freshwater Aquaculture
- 5) Seaweed
- 6) Aquatic Ecology

Proposed Departmental Programs of AQD for the year 2010

- 1) Marine Fish
- 2) Mud Crab and Shrimp
- 3) Mollusk
- 4) Small-holder Freshwater Aquaculture
- 5) Seaweed
- 6) Aquatic Ecology

PROGRAM DOCUMENT

Program Category: Departmental Program
Program Title: Mollusk Program
Responsible Department: Aquaculture Department
Total Duration: 2005-2010

1. INTRODUCTION

In recent years, there was a fast decline of mollusk population from the natural fishery due to heavy exploitation of the resource coupled with habitat destructions and loss of the ecological niche. To address this problem, stock enhancement program of threatened species was developed. As part of the program, there is a need to develop breeding and seed production technologies of the appropriate species.

The increasing demand for abalone (*Haliotis asinina*) in both domestic and international market led also led to the creation of science-based and economically-viable technologies for breeding, seed production, and farming of commercially important marine mollusk. In addition to abalone, other marine mollusk of interest to the region include the window-pane oyster *Placuna placenta*, top shell *Trochus niloticus*, turban shell *Turbo marmoratus*, angelwing clam *Pholas orientalis*, and venus clam, *Paphia undulata*.

2. PROGRAM

2.1. Objectives

The program aims to develop and demonstrate economically- viable mollusk production technologies suitable for coastal communities. Specifically, the Program will: (i) produce seed stocks for stock enhancement and abalone grow-out aquaculture; (ii) create a science-based technology that is economically-viable and appropriate to the region; (iii) demonstrate developed technologies for seed production and culture; and (iv) disseminate information on SEAFDEC/AQD developed technologies

2.2. Program Description

The program was designed to generate, package, demonstrate, and promote science-based and economically-viable technologies for breeding, seed production, and farming of commercially important marine mollusks. To implement the program, studies were focused on understanding the biology, breeding and seed production of mollusk species.

3. PROGRESS OF ACTIVITIES IN THE YEAR

The program is composed of five studies that tackle the three culture phases of abalone culture. These culture phases are the following: (i) Hatchery. There is a continuing effort to refine hatchery techniques to improve settlement and survival of larvae. At present, the settlement (3.5%) and survival (0.3-1%) of postlarvae is still considered as the bottleneck of seed production; (ii) Nursery. (iii) Grow-out. There is a need to study the nutritional requirement of abalone and develop diet that will improve the growth of abalone and will partially replace the limited amount of seaweeds.

Studies on other marine mollusk (window-pane oyster *Placuna placenta*, top shell *Trochus niloticus*, turban shell *Turbo marmoratus*, angelwing clam *Pholas orientalis*, and venus clam, *Paphia undulate*) were not implemented due to lack of technical staff.

Isolation and Cultivation of *Cocconeis* sp. for settlement, growth and survival of post larval abalone *H. asinina*

Two strains of *Cocconeis* sp. were isolated from the mixed diatom samples collected from abalone nursery tanks and from the diatoms that attached to the seaweed (*Turbinaria* sp.) collected from Igang. The two strains were cultured in varying light intensities and culture media. The study was able to isolate *Cocconeis* sp., identified culture requirements (light & nutrients) for mass production. This diatom will provide a useful indication to improve settlement and growth of postlarvae during the hatchery phase. Refinement of hatchery and transport techniques for the donkey's ear abalone *Haliotis asinina*

Larvae were transported at three stocking densities (25,000 l⁻¹, 50,000 l⁻¹, and 100,000 l⁻¹) and at four different transit time (1, 3, 9, and 18 hours) to determine its effect on the survival of veliger and settlement of abalone postlarvae. Results of % settlement after five days of rearing showed that postlarvae transported at a density of 25,000 larvae⁻¹ had the highest settlement rate (3.87%) when transported up to 9 hours and was comparable to 50,000 larvae⁻¹ loading density (33.33%). At the highest loading density of 100,000 larvae⁻¹, lowest settlement rate was attained (0.27%) at similar transport time of 9 h. Furthermore, % settlement was lowest when the transport time was extended up to 18 h.

Preliminary results identified the transit time and loading density of veliger larvae which can be applied in transporting larvae to distant places.

Nursery rearing and culture of the tropical abalone, *Haliotis asinina* in plastic trays

Two abalone juvenile batches were stocked in plastic trays at density of 50 pcs/tray. Growth in terms of average body weight and shell length was observed for 90 days. The experiment revealed that nursery rearing cycle was shorter when using smaller juveniles (standard length : 11 - 15 mm). Acceptable growth was also attained when using cheaper plastic trays. Long-line culture was proven to better than using floating rafts.

Diet development and evaluation for juvenile abalone, *Haliotis asinina* Linne: Lipid and essential fatty acid requirements.

To assist in the improvement and production of a cost effective feed formulation for juvenile abalone, experiments were continued to identify the lipid and essential fatty acid requirements of juvenile abalone. When feeds with the right amount of nutrient are made available to the animal, higher growth rates may result, thus may shorten culture period of abalone.

Regression analysis of the data as a function of weight gain showed that lipid requirement of juvenile abalone, *Haliotis asinina* was optimal at 3.72%. Feeding abalone with a lipid-free or an EFA-deficient diet resulted in slow growth rate.

Supplementation of mixtures of linoleic acid, linolenic acid, eicosapentaenoic acid, and docosahexaenoic acid at levels of 0.2%, 0.4%, 0.8% and 1.6% showed improvement in weight gain. Highest weight gain was attained with the highest level of EFA supplementation at 1.6%. Fatty acid analysis of the lipid samples of the abalone meat showed predominance of the supplemented fatty acids.

Experimental hybridization between Philippine native abalone species, *Haliotis asinina*, *H. glabra*, *H. ovina* *H. planata* and *H. varia*

Two hybrid individuals were produced from cross breeding trials starting mid-2008. The first hybrid resulted from crossing *Haliotis asinina* female and *Haliotis glabra* male, while the second hybrid was a cross of *H. asinina* female and *H. planata* male. Results showed that a hybrid (*Haliotis asinina* female x *Haliotis glabra*) was better in terms of settlement and growth. The growth of hybrid population was also better than the pure *H. asinina*. F1 generations of hybrid stocks are now being reared for grow-out testing.

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
1. Isolation and Cultivation of <i>Cocconeis</i> sp. for settlement, growth and survival of post larval abalone <i>H. asinina</i>	started 2009	Development of culture techniques on-going.
2. Nursery rearing and culture of the tropical abalone, <i>Haliotis asinina</i> in plastic trays	started 2009	Further evaluation of growth and transfer of study site will be done. Water quality parameters will be monitored due to worm infestation
3. Lipid and essential fatty acid requirements of juvenile donkey's ear abalone, <i>Haliotis asinina</i>	started 2008	Histological analysis of abalone samples is currently being done
4. Experimental hybridization between Philippine native abalone species, <i>Haliotis asinina</i> , <i>H. glabra</i> , <i>H. ovina</i> <i>H. planata</i> and <i>H. varia</i>	2008-2015	Further crossing will be done. Triploid trials will be done in big tanks if equipment will be available. Production of juveniles for grow-out/stress test/taste test
5. Refinement of hatchery and transport techniques for the donkey's ear abalone <i>Haliotis asinina</i>	started 2009	Newly approved study, this study will answer inbreeding/runt issues in growth of abalone.
6. Large Scale Production of the Donkey's Ear Abalone <i>H. asinina</i>	yearly	Continuing yearly, techniques developed in the hatchery will be applied and demonstrated.
7. The use of micro-bound diet for abalone postlarvae as partial replacement of diatoms (Hatchery)		To reduce dependence of diatoms especially during rainy season when growth of diatoms is affected.
8. The use of probiotics to improve survival of postlarvae in the hatchery (Hatchery)		Probiotics is known to control growth of non-beneficial bacteria. This may improve the survival of postlarvae in the hatchery.
9. Study on the effect of salinity and turbidity on the fecundity of the abalone breeders (Hatchery)		Bad weather conditions (heavy rains causing turbid and low salinity seawater) affected the cycle of spontaneous spawning thereby reducing the egg production of the breeders and low income of the hatchery. Therefore, there is a need to study the effect of these factors on the gonadal development /spawning of the breeders.

10. Development of recirculating culture system for the donkey's ear abalone, <i>H. asinina</i> . (Hatchery)		Culture of the abalone requires clean seawater hence; the flow-through system was adopted in the hatchery. This method is expensive and will add to hatchery operating cost. During adverse weather conditions this system is difficult to adopt due to low salinity and water turbidity. There is therefore a need to develop an alternative culture system.
11. Confirmation of the newly produced Hybrids using other genetic techniques (Breeding)		The proposed method of confirming hybrid stocks is through karyotyping only. There are other new genetic methods to confirm our stocks.
12. Study on the factors that can cause worm and bacterial infestations of the abalone (Grow-out)		Currently, some of the stocks, either in the hatchery or in grow-out were infested by a parasite that bore in the shells of the abalone. As a result, growth of the animals were hampered and shells were deformed which resulted to a reduced market price. As a precautionary measure, there is a need to identify the factors that lead to mud worm infestation and study its biology and extent of infestation.
13. Use of <i>Traustochytrids</i> as a source of fatty acids to enhance the diet of the abalone juveniles (Hatchery)		The use of algae/fungi, <i>Traustochytrids</i> is one of the potential sources due to its high omega fatty acid content and can be mass produced at required conditions..
14. Extension of the culture period of abalone to 8-9 cm and study of its economic viability (Grow-out)		Currently at SEAFDEC/AQD, abalones are disposed of when the shell length is 5cm (the market-size of the abalone). However, most buyers for export market prefer larger size abalone. This will require an extension of its culture period and cost of culture.
15. Development of cost-efficient and suitable cages design for tropical abalone culture (Grow-out)		The purpose of this study is to test the performance and feasibility of prefabricated plastic cage design for abalone culture. The abalone cage that was sourced from Thailand is expensive and hence not economically-viable.
16. Resource assessment and management strategies for the tropical abalone fisheries (Stock assessment)		There is over harvesting of the existing abalone stocks in the wild that resulted to depletion of the natural resource. Management of abalone had been launched at SEAFDEC at various sites. However, there is no baseline data on wild population which is needed for resource assessment and management strategies.
17. Study on the reproductive biology of other native Philippine abalone species (Breeding)		This study aims to establish a baseline data of the other native abalone species especially on their reproductive biology since they are now use for our cross-breeding studies. Also, these species are difficult to condition in land based-tanks.

18. Experimental pearl production from abalone (Grow-out)		Explore the possibility of producing pearl from abalone
19. Develop hatchery production techniques for Topshell <i>Trochus niloticus</i> (Hatchery)		This study will adopt and refine seed production techniques.
20. Practical guide/manual/DVD on abalone culture		Disseminate grow-out techniques using easy to understand manual/video.

4.2 Expected Outcomes

- 1) Developed mass propagation techniques for *Cocconeis*
- 2) Improved larval settlement and survival rates
- 3) Shortened nursery rearing by stocking smaller size juveniles (SL: 11 - 15 mm) plastic boxes and prefabricated trays
- 4) Determined optimum lipid and EFA requirements of juvenile abalone.
- 5) Produced hybrid abalone with better traits (fast growth/better traits) from either parents
- 6) Standardized transport techniques for larvae and juveniles
- 7) Demonstrated and packaged the technology for abalone seed production using the recently developed hatchery techniques
- 8) Reduced dependence of post-larvae to diatoms through the use of microbound diet for abalone postlarvae
- 9) Improved survival of postlarvae through the use of probiotics
- 10) Confirmed hybrid using modern genetic tools
- 11) Improved growth and survival of abalone in grow-out
- 12) Reduced dependence of expensive fish oil through the use of *Traustochytrids*
- 13) Developed suitable cage design for grow-out
- 14) Baseline data on wild population for resource assessment and management strategies.
- 15) Preliminary information on production of value added product from abalone shell
- 16) Hatchery production techniques for Topshell *Trochus niloticus*

PROGRAM DOCUMENT

Program Category: Departmental Program
Program Title: Shrimp and Mud Crab Domestication Program
Responsible Department: Aquaculture Department
Total Duration: Since 2003

1. INTRODUCTION

Shrimps and mud crabs support one of the most valuable fisheries in the region. However, the culture of *Penaeus monodon* has continued to rely totally on the use of wild-caught broodstock and spawners, resulting in unpredictable production outcomes attributable to inconsistent quality of the spawner. Similarly, mud crab culture has relied on wild seeds resulting in overexploitation and habitat losses. This has led to the inadequate supply of nauplii source in *P. monodon* and to both reduced landings and smaller mean size of *Scylla* spp. collected from the wild. The significant decrease highlights the need to manage the resources and develop seed production techniques. The life cycle of both *P. monodon* and *Scylla serrata* has been completed in captivity, a prerequisite to domestication. All phases of shrimp and crab culture (broodstock, hatchery, nursery and grow-out) have been done, and can be integrated to produce domesticated broodstock. Domestication of shrimp and mud crab is a prerequisite to selective breeding program, which allows for the strict disease prevention and control, and present other opportunities for the improvement of farmed stock.

In the process of developing techniques for the production of broodstock and spawners, optimal nutrition will also be considered. Although the grow-out technique of crab has been established for decades, a formulated diet for the various phases of culture has not been developed to reduce dependence on the more expensive live food such as fish and mollusks.

2. PROGRAM

2.1. Objectives

The main goal of the Program is to develop a technology for the sustainable production of good quality seed and captive broodstock of commercially important crustacean species particularly, *P. monodon*, *P. indicus* and *P. merguensis* for shrimps and *Scylla* spp. for crabs, that can be genetically selected for desired heritable characteristics, particularly disease resistance and/or fast growth.

For shrimps, more specific objectives are: 1) to generate baseline information on the genetic diversity of shrimp stocks; 2) to develop the technology on producing good quality captive broodstock of *P. monodon*, *P. indicus* and *P. merguensis*; 3) to develop or improve diets for captive broodstock; 4) to verify use of white shrimp grow-out diet using environment-friendly schemes; and 5) to characterize IHHNV infecting both *P. vannamei* and *P. monodon*

For mud crabs, the specific objectives are: 1) to generate baseline information on the genetic diversity of mud crab species from various sources; 2) to use molecular genetic tools in effective management and in selective breeding; 3) to develop technology for domestication of *S. serrata*; 4) to mass produce seeds and juveniles of *Scylla* spp. and further improve survival and hatchery/nursery rearing techniques; 5) to reduce cannibalism of crab juveniles through physiological, nutritional and environmental approaches; 6) to reduce the use of fish by-catch in the nursery, grow-out and fattening through development of suitable diets; 7) to accelerate the adoption of improved mud crab technologies; and 8) to assess the the seasonal and long-term trend in seed stock in natural habitat.

2.2. Program Description

The program consists of studies that address the problem on declining supply of good quality broodstock and seed of indigenous species of shrimp and mud crab. Domestication, a prerequisite to selective breeding programs, is pursued by monitoring the genetic structure of base populations of target species, establishing husbandry techniques, developing suitable diets for the different life stages, and culture of live food necessary for good reproductive performance. Studies on husbandry, which includes all phases of culture such as broodstock management, larval rearing, nursery and grow-out, will focus on strategies to improve reproductive performance, survival, growth, and prevention of disease. Stock assessment and socio-economics of each culture phase are included to evaluate impacts of adoption of generated technologies. The activities are linked with the regional programs under the ASEAN-SEAFDEC Fisheries Consultative Group such as Sustainable Aquaculture.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

A. Shrimp

Genetic characterization of *P. monodon* broodstock

Genetic variability at the 16sRNA gene showed genetic differences between stocks. Restriction morphs obtained from RFLP analysis showed monomorphic patterns in stocks (from Negros, Roxas and Bohol) that were examined. Stocks from Negros and Roxas had moderately high genetic variability levels with haplotype diversities at 0.820 and 0.775 respectively compared to the stock from Bohol. Meanwhile, microsatellite marker analysis at three loci showed that the samples from Palawan population differed significantly from ten other sampled shrimp populations from the Philippines.

Studies on improvement of maturation of pond-reared *P. monodon* broodstock

Two feeding tests were conducted on use of the marine annelid *Perinereis nuntia* as a feed ingredient for pond-reared *P. monodon* broodstock. This experiment compared the use of live annelids and annelid meal at 6% of the formulated diet. No significant difference in percentage maturation or spawning could be detected between both treatments.

Another test was conducted to compare diets containing 10% and 20% marine annelid meal and the basal diet where no marine annelid meal was used. No significant differences were detected in survival and percentage females that matured.

Domestication of the indigenous white shrimp *P. indicus* / *P. merguensis*

Availability and abundance of the two white shrimp species were surveyed in several areas in Panay (Dumangas, Concepcion, Tigbauan), and Negros. *P. merguensis* were found to be more abundant in Dumangas and Concepcion than *P. indicus*, but the latter was more abundant in Tigbauan, Iloilo and in Himamaylan, Negros.

Production of *P. indicus* simulating commercial scale runs was conducted.

F₃ *P. indicus* have reached broodstock size. Males will be separated from females so that reciprocal matings between F₃ stocks and wild stocks from Tigbauan and Aklan will be facilitated.

Culture of marine annelid *Perinereis* sp. and its use as substitute for fish meal, shrimp meal and squid meal in shrimp feeds

Two species of marine annelids have been collected from Tigbauan intertidal areas. Majority (99%) of this was the *Perinereis* sp. commonly used as live food for crustacean broodstock.

Feeding tests were also conducted to evaluate different levels of substitution (0% or control, 20, 40, 60, 80 and 100%) of animal protein sources with annelids in formulated diets for *P. indicus* juveniles and *S. serrata* crab instar. Percentage weight gain values in all tests were consistently highest in control diets.

Comparative reproductive performance of pond-sourced *P. monodon* adults fed natural and artificial diets in floating cages

During the first run, maturation and spawning occurred once but mortalities were noted after a week or two in both treatments (control and polychaete extract artificial diet). Initial response of the shrimp to the polychaete-extract diet was good. A replicate overtime of the same set-up will be done after the new batch of broodstock shrimp have been acclimatized to the diet.

Verification of *P. indicus* grow-out diets in ponds using environment-friendly schemes

White shrimp species have been stocked last July in two ponds. The run is ongoing.

Enhancing sustainability of the Philippine shrimp industry through effective health management of native and introduced species

Shrimp samples with known viral infections were analyzed for monodon baculovirus (MBV), hepatopancreatic parvo-like virus (HPV), Taura syndrome virus (TSV), and infectious hypodermal and hematopoietic necrosis virus (IHHNV) to confirm similarity of outcome. Results of diagnosis through PCR showed similar results obtained at SEAFDEC and at the University of Arizona, OIE Reference Laboratory for Crustacean diseases.

Twenty seven samples were tested for IHHNV. Interestingly, the IHHNV obtained from *P. monodon* postlarvae from Myanmar and *P. indicus* from Iloilo, Philippines were tested negative with IHHNV showing their non-infectious nature. IHHNV DNA from 13 samples of *Penaeus monodon* and *P. vannamei* that were chosen based on their sources and geographical origin were amplified and submitted for sequencing. Phylogenetic analysis showed high degree of similarity of most IHHNV isolates with the type IHHNV strain derived from Hawaii, although some strains showed closer relationship with type strains from Taiwan/China group. A phylogenetic tree was derived from the sequence results that showed 3 major strain groupings based on their clustering: a) Hawaii; b) Taiwan/China/Thailand; and c) Madagascar/Australia/India strains.

B. Mud Crabs

Domestication of mud crab *Scylla serrata*

Wild mud crab from various sources (Cagayan, Northern Samar, Camarines Norte and Surigao del Norte) were analyzed for genetic variation. The number of alleles in the three loci ranged from 5 to 24. The crab population in Camarines Norte had the highest mean expected heterozygosity, followed by Cagayan, Surigao del Norte, and Northern Samar. However, analysis of molecular variance showed that the genetic variability between the four populations were not significantly different. Furthermore, there was no significant deviation in each sample population and even in pooled populations. The population structure of *S. serrata* is homogeneous along the Pacific Ocean where they are mainly found, indicating that crabs for domestication and selective breeding can be sourced from any of these four sites.

First generation families were produced from stocks from Cagayan, Camarines Norte, Northern Samar, and Surigao del Norte. Second generation families have also been produced from Northern Samar and Camarines Norte stocks.

Seed Production of mud crab *Scylla* spp.

The embryonic development of the three *Scylla* spp. used for seed production was compared. *Scylla serrata* exhibited the longest incubation period while *S. tranquebarica* and *S. olivacea* had comparable incubation periods. The egg size varied markedly among the three *Scylla* spp. *S. serrata* had the largest egg size while *S. tranquebarica* and *S. olivacea* had almost similar size ranges.

Mud crabs for seed production were sourced from Pontevedra, Capiz and Dumangas, Iloilo.

Nursery production of mud crab, *Scylla serrata* in brackishwater ponds

Nursery culture of mud crab was conducted at Dumangas Brackishwater Station. Megalops or crab instar harvested from the Tigbauan Main Station Crustacean Hatchery were transported and stocked in 20 m² net cages set inside a 600 m² pond. After one month, the survival rate of crablets ranged from 25-71%. Crablets were either sold to farmers or used for grow-out culture experiments. Low survival of crablets in two runs was due to poor water quality during a continuous rain.

Effects of dietary tryptophan on the antagonistic behavior of mud crab *Scylla*

Different levels of dietary Tryptophan (Trp) were successfully incorporated in the mud crab diet. Mud crabs of varied sizes were fed diets with the different levels of dietary Trp. After a month, the crabs were set up for a fight experiment on antagonistic behavior. Results showed that there was a significant decrease in the intensity of attacks by crabs fed 1% Trp compared to those fed the control or 0.5% Trp diet. A longer latency between attacks and less number of attacks were observed in crabs fed higher Trp levels. Moreover, there was a significantly higher survival of mud crab fed 0.5 to 1.0% dietary Trp than the control after 15 days of culture and 30 days of culture.

Development of practical feed for the grow-out culture of mud crab *Scylla serrata*

Two diets with similar gross energy contents but different protein levels were fed to mud crabs in ponds for 100 days. Feeding was done twice daily at a level of 5 to 8% body weight and consisting of 80% pellet and 20% trash fish. Weight of samples showed great variation, but it appears that mud crab fed with the high protein diet had least size variation. A taste test was conducted to compare the harvested crabs with those bought from the market.

Enhancing Adoption of Mud Crab Production Technologies in Northern Samar

Nursery and Grow-out. Nursery rearing was carried out in two phases. Survival rate of crablets ranged from 42.3 to 83% .

Stock assessment. Efforts were also made to assess the presence of wild stocks of crabs in various sites. *S. serrata* was the dominant species in Rosario while *S. olivacea* could be found from December to March. The mean catch per unit effort ranged from 0.03 to 0.51 and from 0.3 to 1.0 crabs/bamboo trap/day for Pambujan and Rosario, respectively.

The community structure of mangroves in Pambujan was dominated by *Avicennia marina* and *A. alba* while *Rhizophora apiculata* and *R. stylosa* were dominant in Rosario. In both sites, the total count of mangrove trees decreased while the total count of saplings and seedlings increased after 18 months.

Socioeconomic impact of adoption of sustainable aquaculture technologies in selected fisherfolk communities

Mud crab culture practices were investigated in selected sites. Growers either employed polyculture or monoculture. Likewise, some were engaged in grow-out while others were in fattening only. Four types of fattening were noted in the study sites: communal rearing in ponds and in pens; and individual rearing in bamboo pen or in plastic container or tied in a pole. Respondents opined that capital and farm space were constraints to their operations. Major problems affecting growers' income were: 1) high cost and irregular supply of feeds, 2) weather condition due to continuous rain, 3) lack of classification standard of quality product in the market, and 4) poaching.

Respondents also welcomed the mud crab nursery operation demonstrated by the SEAFDEC/ACE/CATP collaborative project in the locality. Reasons given were: 1) accessibility of seed stocks, 2) illegal transport of seeds is minimized, and 3) improve income of the community.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

Studies under the Government of Japan Trust Fund 4 (Development of Specific Pathogen Free *Penaeus monodon* broodstock; Domestication of *Scylla serrata*; and Socioeconomic impact of adoption of sustainable aquaculture technologies in selected fisherfolk communities) will be completed this year and the Government of Japan Trust Fund 5 studies will start in 2010. All other activities will be continued in 2009 except for the study on *Enhancing sustainability of the Philippine shrimp industry through effective health management of native and introduced species* that will also be completed this year.

4.1 Planning of the Project Activities

A. Shrimp

Project/Activity Title	Duration	Remarks
Selective breeding of <i>P. monodon</i> <ul style="list-style-type: none"> • Collection of stocks • Production of F₁ families • Selection 	2010-2014	New study under GOJ TF5 <i>P. monodon</i> from sources previously identified as having populations with high genetic variability will be used in a selective breeding program. Individuals for breeding will be selected based on beneficial heritable traits such as fast growth or disease resistance.
Production of captive broodstock of <i>P. monodon</i> <ul style="list-style-type: none"> • Collection of pond-reared stocks • Culture to broodstock size • Density experiment • Sex ratio experiment 	2010-	New study. The protocol for domestication needs to be refined since many problems on this area have not yet been solved, including low survival during culture to broodstock size, low fecundity and percentage spawning. This study will investigate different densities in culturing marketable size shrimp. In addition, sex ratios for captive broodstock will be tested.

<p>Domestication of indigenous white shrimp species <i>P. indicus</i> and <i>P. merguensis</i></p> <ul style="list-style-type: none"> • Survey of sources • Genetic characterization • Production of generations • Development and improvement of diets • Pilot testing 	<p>2009-2011</p>	<p>On-going study</p> <p>The entry of the non-indigenous species of white shrimp, <i>P. vannamei</i>, reflects the need to have alternative species for culture. <i>P. indicus</i> and <i>P. merguensis</i>, both native species but which appears to be depleted in the wild, must be domesticated to provide a sustainable supply of broodstock and spawners</p>
<p>Culture of marine annelid <i>Perinereis</i> sp. and its use as substitute for fish meal, shrimp meal and squid meal in shrimp feeds</p>	<p>2008-2010</p>	<p>On-going study</p> <p><i>Perinereis</i> sp. has been proven to be a good live food for broodstock of crustaceans because of its high content of polyunsaturated fatty acids and prostaglandin. However, its natural habitat faces near depletion. This study aims to develop or adopt culture techniques for reliable production of pathogen-free marine annelids to provide sustainable supply of live food for crustacean broodstock.</p>
<p>Reproductive performance of pond-sourced <i>P. monodon</i> fed natural and artificial diets in floating cages</p>	<p>2008-2010</p>	<p>On-going study</p> <p>The benefit of feeding marine annelids to crustacean broodstock has been demonstrated in hatchery runs with wild broodstock as nauplii source, Marine annelid extract will be incorporated in the shrimp diet and fed to captive broodstock to determine if this will improve reproductive performance</p>
<p>Shrimp hatchery assessment</p> <ul style="list-style-type: none"> • Survey of hatcheries • Workshop on best management hatchery practices 	<p>2010-2012</p>	<p>New study</p> <p>A survey will be done to determine the number of operational shrimp hatcheries, scale of operation, methods of culture, chemicals used, problems encountered, and other pertinent information. This will serve as guide to prepare a workshop on best hatchery management practices.</p>
<p>Verification of <i>P. indicus</i> grow-out diets in ponds using environment-friendly schemes</p>	<p>2007-2010</p>	<p>On-going study</p> <p>The emergence of <i>P. indicus</i>, <i>P. merguensis</i>, and <i>P. vannamei</i> for culture as an alternative species to the more popular <i>P. monodon</i> is envisioned to revive the dying shrimp industry. Hence, the viability of growing white shrimp using environment-friendly schemes and a SEAFDEC-developed <i>P. indicus</i> diet has to be verified and demonstrated. In this scheme, milkfish, siganids or tilapia will be used as biomanipulators.</p>

B. Mud crab

Project/Activity Title	Duration	Remarks
Selective breeding of <i>S. serrata</i>	2010-2012	New study under GOJ TF5; SEAFDEC/AQD has developed the basic techniques for the husbandry of three species of mud crabs (<i>Scylla serrata</i> , <i>S. tranquebarica</i> and <i>S. olivacea</i>). These techniques will be used in a selective breeding program for <i>S. serrata</i> . Selection will be done based on set criteria aimed at producing subsequent generations that exhibit faster growth and better reproductive performance.
Mass seed production of <i>S. serrata</i> <ul style="list-style-type: none"> • Refinement of broodstock and larval rearing techniques • Pilot testing 	2008-2010	On-going study
Nursery rearing <ul style="list-style-type: none"> • Production of juveniles 	2008-2010	On-going study; AQD has developed a technology for producing mud crab juveniles. Refinements in the technology are continually being studied through small scale experiments. Results of these experiments must be applied and verified through mass production runs in cages set in ponds. These runs will demonstrate the viability of nursery rearing and will encourage potential entrepreneurs.
Development of practical feed for the grow-out culture of mud crab <i>Scylla serrata</i>	2008-2009	On-going study
Strategies to reduce cannibalism	2009-2010	On-going study
Development and improvement of formulated diets for larvae, nursery, grow-out and fattening	2010-	New study; The limited knowledge on the nutritional requirements of larvae and other stages of crabs contributes to the inconsistent growth and survival rate. Availability of low value fish and other unprocessed feeds becomes a problem as the industry tries to expand. Hence, there is a need to develop low cost and efficient practical diets. Feeding practices must be managed towards optimizing feed utilization to prevent degradation of the culture environment.

4.2. Expected Outcomes

- 1) Production of generations that will exhibit faster growth or better reproductive performance of commercially important indigenous shrimp and mud crab species
- 2) Refinement of protocol for the domestication of shrimp and mud crab
- 3) Improved reproductive performance of captive broodstock
- 4) Improved diets for all phases of culture
- 5) Reduction in the use of fish and other food items

- 6) Reliable strategies to reduce cannibalism
- 7) Increase in the production of juveniles and marketable size mud crabs
- 8) Updated list of operational hatcheries and practices
- 9) Revision of shrimp hatchery operation manual
- 10) Manual on nursery of mud crab and poster on different white shrimp species

PROGRAM DOCUMENT

Program Category: Departmental Program
Program Title: Marine Fish Program
Responsible Department: Aquaculture Department
Total Duration: 2009-2012

1. INTRODUCTION

The Marine Fish Program of the SEAFDEC Aquaculture Department (AQD) aims to continually improve the technologies for broodstock management, hatchery, nursery, and grow-out culture of marine fishes for sustainable aquaculture development, poverty alleviation in the countryside, and reinforcement of aquatic resources and food security in the Southeast Asian region. Marine fishes such as milkfish, grouper, sea bass, mangrove red snapper, rabbit fish, pompano, hybrid red tilapia, and seahorse are among the species being studied in 24 research topics in the Program.

2. PROGRAM

2.1 Objectives

The objectives are to: (a) improve the technologies for broodstock management, seed production, nursery, and grow-out culture of marine fishes such as groupers (*Epinephelus coioides* and *E. fuscoguttatus*), the Asian sea bass (*Lates calcarifer*), mangrove red snapper (*Lutjanus argentimaculatus*), rabbitfish (*Siganus guttatus*) and milkfish (*Chanos chanos*); (b) develop breeding and seed production technologies for Asian pompano (*Trachinotus blochii*); (c) develop practical feed for Barbour's seahorse (*Hippocampus barbouri*) broodstock ; (d) develop polyculture techniques for saline-tolerant, hybrid red tilapia in brackish water ponds.

2.2 Program Description

The program in 2009 comprises 24 studies that fall under Research and Technology Verification and Demonstration Divisions. They span the various stages in culture involving, broodstock, seed production, nursery, and grow-out culture of marine fishes. Some projects involve the production of marine fishes in brackish water ponds and in floating net cages. The studies are done in laboratory, broodstock, and hatchery/nursery facilities at the Tigbauan Main Station, brackish water ponds in Dumangas Brackishwater Station, and in floating net cages at the Igang Marine Station.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Development of strategies to extend the spawning season of sea bass in captivity

As part of the initiative to develop strategies to extend the spawning season of sea bass in captivity, the study to evaluate the effects of temperature on reproductive performance was continued in 2009. Generally, higher percentage of mature fish at 29-31 °C was observed compared with those maintained at ambient temperature. Fecundity was comparable (70-80%) between the two treatments but hatching rates were better in the heated tanks (75 vs 46%). The study will be terminated in December 2009, but monitoring of broodstock performance will continue through 2010.

Development of assay utilizing IGF-II mRNA expression as marker for egg quality in grouper and siganid

Previously, insulin-like growth factor II (IGF-II) mRNA expression was shown to be differentially expressed at different stages of embryogenesis in grouper and, in siganids, it could be used as a predictor for percent development during the early embryo stage. The second phase of this work aims at developing a non invasive, simple, and rapid assay utilizing IGF-II mRNA expression as marker for egg quality in grouper and siganid. The present work is still in its early stages involving the standardization of the technique using real time-polymerase chain reaction (RT-PCR).

Studies on seed production techniques of milkfish and rabbit fish

The strategies used to improve the seed production techniques for milkfish and siganids are as follows: (1) the feeding of the milkfish and rabbitfish broodstock fortified diet; (2) the early introduction of SEAFDEC larval diet; and (3) the enrichment of rotifers with SEAFDEC formulated enrichment media

In milkfish broodstock, spawning frequency, total number of good eggs, number of normal larvae, and survival of milkfish fry were either as good or better than those obtained in 2008. The milkfish broodstock diet was fortified with vitamins and lipids. The early introduction of larval diet and emulsion to enrich the rotifer reduced the incidence of abnormal larvae. Survival rates of siganid fry was improved compared with those obtained in 2008.

Studies on seed production techniques of high value marine fish species such as grouper, red snapper, sea bass and pompano

The interventions used to improve the seed production techniques for high value marine fish are as follows: (1) the supplementation of grouper and red snapper broodstock diets with vitamins and arachidonic acid in capsule form; (2) the use of larval diet at early stage; and (3) the use of locally produced enrichment media for rotifer.

Survival rates for sea bass fry was up to 30%, much less than those observed in 2008 (70%). Survival rates for *E. coioides* fry was up to 5% and *E. fuscoguttatus* spawning frequency was low during this period. Survival rates for pompano fry was up to 10%, also much lower than those obtained in 2008 (up to 60%).

Assessment of the potential of mysid shrimps (Crustacea: Mysidacea) as live food in marine fish culture. Nutritional evaluation of the mysid shrimps.

Previous results indicated that mysids are potential live food substitute for *Artemia* in grouper larval culture because they improved the profile of highly unsaturated fatty acids in digestive enzyme levels in larval grouper. Mysids were superior than enriched *Artemia* biomass as live food for grouper larvae. In this connection, the study aimed at developing a mass production technique for mysids was initiated. A laboratory scale, indoor culture system for mysid mass production is presently being developed.

Use of PUFA-rich thraustochytrids as enrichment diet for live foods (rotifer and *Artemia*) in the larviculture of sea bass, *L. calcarifer*

The study investigated the feasibility of using endemic PUFA-rich thraustochytrids as enrichment diet for rotifers and *Artemia* that are used as natural food for marine fish larvae. The DHA content of rotifers enriched with freeze-dried *Schizochytrium* given using the drip method resulted in more stable DHA levels in the rotifers after 24 h. Furthermore, newly-hatched *Artemia* nauplii enriched with freeze-dried *Schizochytrium* showed increased DHA content similar to *Artemia*

enriched with A1 DHA SELCO, a fish oil-derived commercial enrichment product. The enriched *Artemia nauplii* will be used as natural food for sea bass larvae.

Growth and survival of grouper *Epinephelus* sp. larvae: An energetics approach

Diurnal measurement of oxygen consumption of Day 3 unfed grouper larvae showed initially about 2-3 times higher levels than those that were fed for the first 12 hours of monitoring. This indicated the increased activity of the larvae in search for food as its yolk and oil globule were about to be depleted. Electron microscopy (TEM) of the ultrastructure of the gut of grouper larvae during development showed larger sizes and higher densities of lipid vacuoles in the intestinal epithelial cells of Day 33 co-fed grouper larvae compared with those of larvae given natural food.

Supplementation of L-tryptophan (Trp) and ginger in formulated diets: Effects on the nursery performance of grouper and sea bass reared in cages in brackish water ponds

The effects of supplementation of Trp and ginger in formulated diets for grouper and sea bass on the growth, survival, and disease resistance in nursery cages in the brackish water pond were evaluated. At termination of the second run, sea bass juveniles fed Ginger-supplemented diet was significantly larger (body weight and total length) compared with those fish given basal diet and diets supplemented with 0.65% L-Trp only or a combination of 0.65% L-Trp + 2% Ginger. Survival (range: 35-45%), however, was not statistically different among the diet treatments.

Supplementation of formulated diets with Ginger only or L-Trp+Ginger enhanced the immune response of seabass juveniles.

In a trial done with grouper, there were no significant differences in growth and survival among the different diet treatments. Survival was rather low for this batch of grouper juveniles.

Nursery culture techniques for groupers, sea bass and snappers in cages in pond: Production of juveniles using formulated diets

The mangrove red snapper *L. argentimaculatus* were reared in net cages inside the pond and fed formulated diets (SEAFDEC formulated and commercial). Fish fed SEAFDEC diet showed the best growth among those fed formulated diets with average body weight of 44.8 g, survival rate of 89.8% and specific growth rate of 4.32%.

For the experiment with grouper, *E. coioides*, data obtained for the 2 batches showed that bigger size fish stocked had better survival (83-92%) than smaller size fish (41-71%) after 14-17 days of feeding the two diets. Experiments will continue until the desired size of 40-50 g fish is obtained.

Development of nursery culture techniques for siganids in ponds: Verification of growth performance using supplemental diet of SEAFDEC formulated feeds

Siganids were stocked at density of 1.9 fish/ m² and fed on filamentous green algae grown in the ponds. After 30 days on natural food, ABW reached 15.5 g. Thereafter, supplemental feeds of seaweeds given *ad libitum* or SEAFDEC formulated diets (39-40% crude protein) of 1:1 or 1:2 ratios of fish : plant protein sources were given at 8 – 5% of ABW. After 62 days of culture, fish fed formulated diet performed better than those given seaweeds. Data revealed the possibility of inclusion of more plant protein source in the practical feed for siganids.

Milkfish fingerling production in floating net cages

Several batches of hatchery-bred milkfish fry (*hatirin*) were stocked at 600 or 200/m³ in fine-meshed floating net cages measuring and reared for 30 or 60 days. The first batch of *hatirin* reared at a higher stocking density of 600/m³ suffered from slow growth. After 30 days at a

stocking density of 200/m³, the second batch of hatirin attained a higher average body weight of 1.7 g and survival of 21%. The succeeding trials will aim at increasing the growth and survival rates of fingerlings in the marine net cages.

Alternative feeding strategies for milkfish

Previous results showed that average body weight of milkfish subjected to 2-week alternate starvation and refeeding cycle was comparable with that of the control group that was fed daily. This indicated that compensatory growth mechanisms might be at work. Another experiment was conducted to assess the effects of different feeding regimes on growth of milkfish in a simulated marine cage environment. Milkfish fed on alternate days did not grow as well as milkfish fed daily. However, milkfish subjected to a 2-week alternate starvation and refeeding cycle did not exhibit compensatory growth of comparable magnitude as that observed in tanks. Prolonging the starvation period to 3 weeks did not enhance the compensatory growth response.

Verification of grouper, snapper and rabbitfish grow-out diets in cages in pond

Verification studies on various marine fishes using SEAFDEC formulated diet compared with commercial diet continued to show that the SEAFDEC diet was consistently comparable if not better than the corresponding commercial diet.

Refinement of intensive grow-out culture of sea bass (*L. calcarifer*) in brackish water pond using SEAFDEC formulated diets with higher energy level

Sea bass, grown at a stocking density of 1/m², given SEAFDEC AQD diet compared well with those given commercial feed. After 180 days of culture, sea bass fed SEAFDEC diet had average body weight of 361 g while those on commercial feed had average body weight of 304 g. FCR and survival between the two treatments were also comparable. -

Refinement and dissemination of intensive grow-out technique for the polyculture of milkfish *C. chanos*, white shrimp *P. indicus*, and crab (*Scylla* spp)

Milkfish was fed SEAFDEC diet after day 35 or after the natural food (lumot) in the pond was totally depleted. After 120 days of culture, average body weight was 394 g, survival rate was 95%, FCR was 2.0, and production of 2900 kg was obtained.

Presently, milkfish is being cultured for 75 days. In comparison with previous trial runs, this third run has the best growth with an FCR of 1.3.

Net cage culture of sea bass, *L. calcarifer*, in freshwater farm reservoir using SEAFDEC formulated diet and commercial feed

Sea bass culture in net cages was tried in Lake Vito, Bgy., Camambugan, Dingle, Iloilo using floating bamboo net cages installed in the freshwater reservoir. Growth performance of seabass fingerlings fed SEAFDEC diet and commercial feed was compared. Preliminary results showed growth on SEAFDEC diet was comparable with that on commercial feed. Survival was low.

The use of phased diets (starter, grower, and finisher) for grouper (*E. fuscoguttatus*) cultured in floating net cages

Grouper (*E. fuscoguttatus*) were cultured in floating net cages and fed SEAFDEC/AQD grouper practical diet tailored at different phases of growth. Fish were harvested when they attained 450-500 g average body weight. Total harvest sold to SEAFDEC staff and other buyers was 242 kg. Sensory evaluation was done on the grouper harvest. Overall assessment of the grouper showed that this was rated 'as being liked moderately' to 'being liked very much'.

Improvement of the nutritional value of locally available feed resources for practical aquatic feeds by submerged fermentation and solid substrate fermentation using milkfish gut bacteria and/or selected fungi

Previously, two isolates from milkfish gut, presumptive *Bacillus sp.* and *Lactobacillus sp.*, were assayed for their ability to ferment carbohydrates. Comparison of the sequences of the PCR products with known sequences in Gene Bank confirmed the identification of *Bacillus cereus*.

Fermentation trials were done on *Lactobacillus sp.* isolate using ipil-ipil leaf meal as substrate. Five culture media were used for the preliminary experiment, namely: trypticase soy broth, nutrient broth, rice bran-molasses broth, starch solution broth, distilled water (control). For nutrient broth, the bacterial count peaked after 48 h, then decreased after 72 h. For both the rice bran-molasses and starch, bacterial count peaked at 72 hours of fermentation. Specific activities are high for carbohydrase, alpha-amylase, and protease in both rice bran-molasses- and starch containing media, while low in nutrient broth.

Use of soybean meal and soy protein concentrate as alternatives to fish meal in practical feeds for milkfish *C. chanos*

The first experiment aimed to determine the optimum levels of protein and energy in practical diets for juvenile milkfish ran for 12 weeks. Preliminary results prior to statistical analysis of the growth data suggested that the optimum protein and fat levels in the practical diets containing fishmeal and soy bean meal are 34.7 and 9.8%, respectively.

Fish samples are being processed to determine whole body composition and liver protein analysis by standard methods. Feed samples are being analyzed for complete amino acid profile. Preparations are also underway to conduct the second experiment to look at the optimum level of soy bean meal in diets based on the results of experiment 1.

White cowpea meal as alternative source of protein for grouper, *E. fuscoguttatus*.

In finding alternatives to fish meal in aquaculture feed, it was found that white cowpea meal (20%) in grouper diet was comparable to fishmeal-based diet based on the growth performance, FCR, survival and flesh quality evaluation. Regardless of batch of fish, the growth performance of grouper between two dietary treatments was comparable for the control and cowpea containing diet fed fish, respectively. Flesh quality evaluation showed that both control fish and fish fed cowpea containing diet were rated “like moderately” as general acceptability by 20 evaluators.

It is also recommended that feeding be done once a day every morning and that the feed should given to fish gradually until they finish the ration for the day.

Other studies

The other studies that have just started and are presently in the early stages of implementation are as-follows: (i) formulated diets for adult seahorse; (ii) effect of dietary vitamin C on reproduction, egg and larval quality, and immune responses of grouper *E. fuscoguttatus*; (iii) intensive production of red tilapia hybrid (*O. mossambicus-hornorum* hybrid x *O. niloticus*) in polyculture with white shrimp (*P. indicus*) and mud crab (*S. serrata*) in brackish water ponds; (iv) nursery culture of pompano (*T. blochii*) in floating net cages; and (v) Pompano (*T. blochii*) grow-out culture in floating net cages.

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

4.1 Brief description of each planned project

Most of the activities in the Program will be continued in 2010. For those that are about to be completed, scientific papers and technical manuals will be written. Presently, two technical manuals – on intensive culture of sea bass in brackish water ponds and milkfish fingerling production in ponds - are being prepared for publication. A third on integrated management of snails in ponds will be written up. Scientific papers on using IGF-II mRNA as marker of egg quality in marine fish, the nutritional evaluation of mysid shrimps as live food for marine fish culture, use of white cowpea as alternatives for fish meal in grouper diets, and isolation and characterization of lactic acid bacteria from the gut of milkfish are also being prepared. Lastly, the Program will pursue studies related to integrated, land-based marine fish aquaculture starting in 2010.

4.2. Expected Outcomes of the Proposed Projects/Activities

- 1) Improved broodstock feed for milkfish and other marine fish
- 2) Rapid, non-invasive assay method as marker for egg quality
- 3) Better understanding of bioenergetics and larval nutrition in grouper
- 4) Improved larval rearing techniques using enriched natural food and early introduction of larval diets
- 5) Technique for the mass production of mysid shrimps as live food for marine fish culture
- 6) Improved nursery culture techniques to mitigate cannibalism and enhance disease resistance in groupers and other marine fish
- 7) Improved nursery production of marine fish in ponds using SEAFDEC diets
- 8) Techniques for milkfish fingerling production in ponds and marine net cages
- 9) Finding alternative protein sources to fish meal for developing low pollution grow out diets for marine fish
- 10) Finding alternative feeding strategies to improve efficiency of milkfish grow-out production
- 11) Improved grow-out production of marine fish in ponds and in floating net cages using SEAFDEC diets
- 12) Enhanced productivity of grow-out marine fish culture by polyculture with other species
- 13) Integrated, land-based, and sustainable marine fish culture technology

PROGRAM DOCUMENT

Program Category: Departmental Program
Program Title: Small Holder Freshwater Aquaculture Program
Responsible Department: Aquaculture Department
Total Duration: 2009-2012

1. INTRODUCTION

In developing countries in Southeast Asia, indigenous freshwater species abound in vast areas of inland waters. Proper utilization and management of these resources for mankind's sustenance will definitely provide solutions not only to food security but also to poverty alleviation which is another basic regional concern. Thus, marginalized fisherfolk from rural communities who engage in backyard fishfarming, if given proper training on fundamental aquaculture concepts, shall be able to provide their families food on the table and alternative livelihood opportunities.

SEAFDEC/AQD, through its Small Holder Freshwater Aquaculture Program conducts scientific research to generate verified farming and seed production technologies on selected freshwater aquaculture species. These technology packages are disseminated through training and extension activities that respond to the needs of AQD's numerous stakeholders, particularly the small scale fishfarmers. On the whole, the program is geared towards the adoption of these technologies for sustainable aquaculture development and livelihood improvement in the region.

2. PROGRAM

2.1 Objectives

To generate and transfer science-based technologies for breeding, hatchery and farming of selected freshwater aquaculture commodities for rural development and improved livelihood.

2.2 Program Description

The program involves research, technology verification/demonstration and training activities that are focused on the development of optimal breeding, seed production and grow-out culture strategies for regionally important freshwater commodities such as the giant freshwater prawn, Asiatic carps, tilapia, catfish and indigenous freshwater fish species. Apart from improved fish/prawn seedstock production and husbandry schemes that are packaged into aquaculture business technologies, the program also promotes the implementation of effective health management strategies for all the farmed species for their sustainable production.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Giant freshwater prawn:

In the domestication of the indigenous prawn species, *Macrobrachium wallacei* or *M. rosenbergii rosenbergii* it was noted that it takes more than a year for the females to mature in contrast to the commercial species *M. rosenbergii* or *M. rosenbergii dacqueti* which matures in 4-6 months. However, like *M. rosenbergii* the ideal incubation salinity for *M. wallacei* is from 0-6ppt and the suitable larval salinity is 12ppt for both species. The only difference is that *M. rosenbergii* can tolerate a reduced larval salinity of 6ppt. Moreover, using either the clearwater or greenwater larval rearing system, survival to postlarval stage is very low at 1% compared to *M. rosenbergii* which has an average survival of 30%. When *M. wallacei* juveniles were reared in tanks, daily growth rate is slower at 0.02g/day unlike in cages where the prawns grew by 0.17g/day. Although at this time *M. wallacei* shows limited potential in aquaculture, given a longer domestication

period just like the commercial species, this native species could later be considered for commercial aquaculture. This is based on observations that the period of *M wallacei* metamorphosis from hatchlings to postlarvae was reduced from 50 days to 36 days in subsequent larval rearing cycles using the greenwater method. For now, results from these studies may find use mainly in the propagation and conservation of this native species.

Meanwhile, production of the commercial freshwater prawn species using the greenwater method has increased this year with 90,902 postlarvae produced from January to September 2009.

Asiatic carps:

The ideal stocking densities for bighead carp (*Aristichthys nobilis*) fry in lake-based cages during warm and cold seasons were noted at 300fry/m and 200fry/m, respectively. On a related note, a technology verification study on the production of advanced bighead carp fingerlings in a lake-based fishpen is on-going and about P22,800 worth of fingerlings were sold.

Meanwhile, an Evonik-Degussa commissioned nutrition study is currently evaluating the response of common carp to amino acid supplemented feeds containing fish meal partially replaced with plant-based protein. Tank-based trials are underway. The diets used in the study were analyzed in Germany. A confirmatory proximate analysis on the same feeds shall be done at AQD.

One session of bighead carp hatchery and grow-out operations training course was held in April 2009.

Tilapias:

An ACIAR-funded study in collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR) has set up tilapia grow-out cages in Lakes Bato and Buhi in Bicol. This study is part of the Integrated Fisheries Resource Management in the Rinconada lakes: Aquaculture and Water Quality component. Two clusters of farmers, one each from Lakes Buhi and Bato underwent training on tilapia farming, as they are tasked to manage and monitor the experimental stocks in their respective areas using a modified culture strategy of alternate feeding. Monthly samplings are being conducted.

At Laguna de Bay, a modified system of intensive tilapia culture in cages is being verified. Rearing tilapia on a commercial diet from a 20g initial average stocking size to an average range of 195g-297.8g in three months was obtained based on a computed feed conversion ratio of 1.8. Rearing trials are still on-going and a cost-benefit analysis of the rearing operation will be estimated after the final run.

In the Tigbauan Main Station, 300,000 pcs of Nile tilapia fingerlings and 39,000 pcs of red tilapia seedstock were produced from a study on the mass production of tilapia. Trials on sex-reversal methods that shall be adopted in the production operations are underway. Meanwhile, growth of tilapias in cages in a freshwater reservoir in Dingle, Iloilo fed a SEAFDEC and a commercial diet was compared. The growth performance and feed efficiency of the tilapias fed the SEAFDEC diet were similar to those fed the commercial diet.

One training session on tilapia breeding and farming was held in February and a forthcoming week-long session will be conducted in late October 2009.

Asian catfish:

Verification trials on the grow-out culture of the native catfish *Clarias macrocephalus* in lake-based netcages are on-going. Preliminary runs in tanks are being conducted as stocks for cage farming are insufficient. Problems have been encountered in the production of fingerlings for the grow-out trials as diseases, particularly ectoparasites, have infected the experimental stocks.

One session of catfish breeding and farming training course was conducted last May and a forthcoming course will be conducted in October.

Indigenous species:

In 2009, studies on several freshwater indigenous species, namely: silver therapon, climbing perch and Manila sea catfish were commenced. The reproductive biology of silver therapon *Leiopotherapon plumbeus* found in several freshwater habitats in Luzon is being investigated. Silver therapon samples from Taal Lake had the highest mean body weight, mean body length and gonado-somatic index compared to stocks from Candaba, Laguna Lake and Sampalok Lake. Histological examination of the therapon ovaries revealed three maturation stages and as typically observed in teleosts, ovarian development was seen as a progressive increase in ovarian follicular diameter due to yolk accumulation in the oocytes.

Silver therapon grown in lake-based net cages had similar mean body weights when fed trash shrimp feed or commercial prawn feed. Growth was higher for both treatments over the unfed control.

Growth of climbing perch tanks using farm-based feeds like a) raw janitor fish meat (JFM), b) JFM + rice bran, c) JFM + cassava starch and d) tilapia feed was evaluated. Results showed slow growth and no differences in the average weight gain of climbing perch fed the different diets in four months.

Manila sea catfish seedstock obtained from the wild were reared in tanks and in cages for 3 and 6 months, respectively. No significant differences were noted in the specific growth rate when the catfish in tanks were fed catfish feed at 5%, 10%, 15% and 25% fish biomass. Catfish in cages stocked at 50/cage had an average weight gain of 26.75g.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Planning for the Program Activities

Project/Activity Title	Duration	Remarks
Activity 1. Research		
1.1 Genetic Improvement of giant freshwater prawn <i>Macrobrachium rosenbergii</i>		
1.1.1 Development of effective broodstock management schemes for improved growth and reproductive performance	2010-2014	With GOJ-TF support comparison of the reproductive and larval production performance of domesticated prawn hatchery stocks (F ₅) against new stocks obtained from the wild; will devise new broodstock management scheme to improve growth and breeding performance
3.1.2 Use of marine algal species in rearing freshwater prawn larvae	2010	AQD funded utilization of marine algae (<i>e.g. Nannochloropsis</i> etc.) in the greenwater rearing method to increase postlarval yield
1.1.3 Development of artificial diets for freshwater prawns	2010	With GOJ-TF support evaluation of specially-formulated broodstock and grow-out diets in prawns

1.2 Refinement of broodstock, hatchery and nursery schemes for commercially important freshwater fishes (carps, catfishes)		
1.2.1 Determination of optimum stocking density for bighead carp nursery rearing in cages	2010	AQD-funded different stocking densities will be tried in rearing BH carp larvae from size 22 to size 14
1.2.2 Development of health management strategies in catfish culture	2010	AQD funded -catfish hatchery stocks shall be monitored and examined regularly to prevent mortalities; fish health management techniques shall be tested
1.3 Improvement of tilapia production technology		
1.3.1 Monosex culture and selective breeding for improved carcass traits in saline tilapia	2010-2012	With possible external funding support genetic stocks of saline tolerant tilapia (red tilapia, <i>Molobicus tilapia</i> strain and <i>O mossambicus</i>) will be screened for selective breeding to genetically improve carcass traits; marker assisted selection will be tried
1.4 Development of breeding, hatchery and culture techniques for indigenous freshwater fish/prawn species		
1.4.1 Assessment of reproductive biology, breeding and larval rearing methods for silver therapon	2010	With external funding support; continued from 2009 -protocol for induced breeding and larval rearing shall be developed
1.4.2 Development of breeding and larval techniques for climbing perch	2010	With possible external funding support protocol for induced breeding and larval rearing shall be developed
1.4.3 Cage farming of climbing perch in Laguna de Bay	2010	AQD-funded; continued from 2009 growth capacity of climbing perch in lake based cages shall be tested using different feeds
1.4.4 Cage farming of Manila sea catfish	2010	AQD-funded; continued from 2009 - conditions for optimum growth of Manila sea catfish in cages shall be determined
1.5 Evaluation of the aquaculture potential of other indigenous prawn species		
1.5.1 Exploratory studies on the breeding and farming of <i>Macrobrachium lar</i>	2010-2012	With possible external funding support -Breeding, larval rearing and farming protocols for <i>M lar</i> shall be determined



Activity 2. Technology Verification and Demonstration		
2.1 Improvement of production technology of commercially important freshwater aquaculture species		
2.1.1 Mass production of giant freshwater prawn postlarvae using the greenwater system	2010	AQD-funded; continued from 2009 production of giant freshwater prawn postlarvae shall be continued
2.1.2 Advanced bighead carp and tilapia fingerling production in a small fishpen	2010	AQD-funded; -production protocol of advanced bighead carp and tilapia fingerlings shall be verified continued from 2009
2.1.3 Mass production of tilapia	2010	-increased production of tilapia seedstock shall be pursued
2.1.4 Tilapia and prawn cage farming in freshwater dams and reservoirs	2010	AQD-funded continued from 2009; prawn farming to be incorporated in 2010 -optimum farming methods for tilapia and prawn co-culture in cages shall be determined.
2.2 Promotion of packaged freshwater aquaculture technologies		
2.2.1 ABOT-AquaNegosyo extension service	2010	continue to introduce/promote viable freshwater aquaculture technologies to potential investors and other stakeholders
2.2.2 Participation in Trade Fairs/Exhibits	2010	
Activity 3. Training and Information Dissemination		
3.1 Regular training courses		
3.1.1 Freshwater Aquaculture Operations and Management	2010	continue to conduct training courses through structured learning (lectures/practical skills training)
3.1.2 Short-term (3-5 day) training courses in specific commodities and topics (tilapia, carp, catfish, prawn, natural food, feed formulation)	2010	
3.1.3 Freshwater Prawn Breeding and Farming	2010	
3.2 Client-driven courses	2010	Client-sourced funds
3.2.1 on-site (local/international)		
3.2.2 AQD-based		
3.3 Internship, on-the-job	2010	-continue to train students through internship
3.4 Publication of manuals		
3.4.1 revision of carp, tilapia manuals	2010	write manuals/handbooks to promote viable freshwater aquaculture technologies to different target readers

3.4.2 publication of farmer-friendly manuals (to be translated into languages of other SEAFDEC Member Countries) for use in the promotion of rural aquaculture	2010	
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4.2 Expected Outcomes of the Proposed Projects/Activities

- 1) New broodstock management scheme to produce prawn stocks with improved growth and breeding performance
- 2) New or refined greenwater rearing method to increase postlarval yield
- 3) Production of specially-formulated broodstock and grow-out diets for prawns
- 4) Optimum stocking density for rearing bighead carp larvae from size 22 to size 14
- 5) Ideal fish health management techniques determined and implemented
- 6) Improved genetic stocks of saline tolerant tilapia (red tilapia, *Molobicus tilapia* strain and *O. mossambicus*)
- 7) Protocol for induced breeding and larval rearing developed
- 8) Growth capacity of climbing perch in lake based cages using different feeds determined
- 9) Conditions for optimum growth of Manila sea catfish in cages determined
- 10) Breeding, larval rearing and farming protocols for *M. lar* determined
- 11) Increased production of giant freshwater prawn postlarvae
- 12) Production protocol of advanced bighead carp and tilapia fingerlings verified
- 13) Increased production of tilapia seedstock
- 14) Optimum farming methods for tilapia and prawn co-culture in cages determined
- 15) Viable freshwater aquaculture technologies promoted to potential investors and other stakeholders
- 16) Human resources trained in freshwater aquaculture methods
- 17) Manuals/handbooks (that promote viable freshwater aquaculture technologies to different target readers) published

PROGRAM DOCUMENT

Program Category: Departmental Program
Program Title: Seaweed Strain Improvement
Responsible Departments: Aquaculture Department
Total Duration: 2008-2010

1. INTRODUCTION

The seaweed industry of the Philippines is the leading aquaculture industry in terms of production though ranks number three in export value. Despite several success stories of seaweed farming in the country, this was not spared from problems. The occurrence of 'ice-ice' disease since the early years of commercial farming in the '70s still persists to the present. Likewise, the concomitant occurrence of the endophyte *Neosiphonia* and other harmful epiphytes, aggravate the problem on production. These two problems result to a severe problem of the farmers in sourcing good quality cultivars that are free from 'ice-ice' and endophytes. Even in areas like Zamboanga peninsula and Sitangkai, Tawi-Tawi known to have abundant and diversified strains are not spared from cultivar shortage and inavailability.

Tissue culture is a traditional form of biotechnology that involves the regeneration of plantlets from callus-like structure of plant tissues. Several earlier studies have demonstrated the feasibility of producing plantlets from tissue culture of *Kappaphycus* and *Euchuema* (Dawes and Koch 1991, Dawes et al 1993, Hurtado and Cheney 2003, Reddy et al 2003). Their reports also show the success of outplanting.

The use of regenerants from tissue culture technique and from sporelings as source of cultivars for nursery purposes and consequently for commercial farming could be a possible solution to the shortage and inavailability of cultivars. Terrestrial agriculture has proven the significance of nursery in the propagation of seedlings.

It is in the above context that a Program on strain improvement to include *in vitro* mass propagation of regenerants from tissue culture & mutagenesis and natural sporulation, land-sea-based nursery bank and outplanting to mitigate the problem on cultivar shortage and inavailability.

2. OBJECTIVES

General objective: The ultimate objective of the Seaweed Program is to obtain strains of *Kappaphycus* with fast growth rate, resistant to diseases, and possess improved carrageenan characteristics as source of 'new' cultivars for land-sea based nurseries and consequently for a pilot commercial farming.

Specific objective: To optimize development and production of microplantlets and sporeling; to establish land-sea-based nursery for 'new and improved' strains of *Kappaphycus*; and 2.3 to identify improved strains of *Kappaphycus* thru DNA fingerprinting

3. PROGRAM DESCRIPTION

The Program deals primarily with the problem of deteriorating quality of cultivars consequently resulting to a reduced production and productivity of the seaweed farmers. Two strategies are done to address this problem, these are: (1) tissue culture and mutagenesis, and (2) natural sporulation.

4. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Tissue culture: Successful techniques were developed in regenerating young plants of *Kappaphycus* using a novel technique by using Soluble Seaweed Extract Powder + Plant Growth Regulators (PGR). Optimization studies (culture media concentrations either singly or in combination with PGR, pH-temperature, and section density/mL of culture media) were done for each variety of *Kappaphycus*. Mass production of explants for regeneration purposes was done using the optimized concentration, pH-temperature, and section density/mL of culture media to produce several microplantlets. Several young plants were outplanted to SEAFDEC Marine Station Igang, Guimaras in small net cages and long lines at Panyam, Zamboanga City. The original plants grown on 2 lines attained a daily growth rate of 2.8-3.4%/day and these were expanded to 13 lines after 42 days of culture. Several plants ready for outplantation are presently stocked at the land-based nursery tanks. Three color morphotypes (brown, green and purple) of *K. alvarezii* var. *tambalang* have been outplanted originally developed from tissue culture techniques.

Natural sporulation: Sporelings from carposporophyte and tetrasporophyte plants from farmed and wild *Kappaphycus* proved to be good sources of ‘new’ cultivars as evidenced from the initial biomass given to seaweed farmers in Cabalagnan, Guimaras. The resistance of these ‘new’ plants vs. the commercially farmed *Kappaphycus* was tested and the former showed better heat-resistance characteristics.

5. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

- 1) Continue mass production of microplantlets and sporelings for land-sea-based nursery
- 2) Establishment of sea-based cage nursery in Igang and Zamboanga (expansion)
- 3) Field culture trials using plants from the sea-based nurseries

5.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Mass production of microplantlets & sporelings (This is a continuing activity to test other available varieties in the field)		Purchase of bioreactors; additional purchase of glasswares and PGRs
Establishment of sea-based cage nursery (using plants developed in 2009) in Igang & Zamboanga	Jan 2010	
More field culture trials using plants from the sea-based nurseries in other places of Guimaras & Zamboanga and possibly demo farm	Jan 2010	Availability of sufficient funds

5.2 Expected Outcomes

- 1) Viability of the different varieties of *Kappaphycus* developed from tissue culture and natural sporulation for land-sea-based nurseries and pilot demo farms
- 2) Availability of fast growing and disease-resistant varieties.

PROGRAM DOCUMENT

Program Category: Departmental Program
Program Title: Aquatic Ecology
Responsible Department: Aquaculture Department
Total Duration: 2008-2012

1. INTRODUCTION

The extensive use of estuarine and coastal waters for aquaculture has contributed to the degradation of water and soil quality. There is a need for aquaculture technologies that recognize the importance of ecosystem approaches and suitable operating procedures. The concept of carrying capacity of the aquatic environment can be used as a strategy to alleviate, if not prevent coastal pollution brought by aquaculture activities.

2. PROGRAM

2.1 Objectives

To generate aquaculture technologies with the least possible negative impact on the environment.

2.2 Program Description

The aquatic ecology program continuously monitor the impacts of aquaculture activities on the environment, establish information on interactions and the balance between farmed species and natural diversities, and make use of bioremediators to lessen aquaculture wastes.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

***Anodontia philippina* and *Holothuria scabra* as bioremediators in an intensive cage culture system**

Igang Marine Station was visited to identify cages and plots where *Anodontia philippiana* and *Holothuria scabra* will be stocked. Equipment for monitoring sediment and water quality parameters were purchased. Sources of *Anodontia philippiana* and *Holothuria scabra* have already been identified. Pens for the sandfish are being constructed and being readied for the experiment that will be conducted in Igang Marine Station.

Determination of ammonium uptake of *Gracilariopsis bailinae* and its impact on the co-culture of abalone, *Haliotis asinina*, and *G. bailinae* in a recirculating system

An experiment was carried out at 1ppm NH₄, stocking density of 1 kg/m² and water volume exchange of four per day. Ammonium removal was 48%. Specific growth rates were 1.4 to 1.8% day⁻¹ for *Gracilaria* that received 1 ppm NH₄ and 1.4-1.7% day⁻¹ for *Gracilaria* without treatment. Wet weight to dry weight ratios ranged from 8.2 to 9.9. Agar yields were 3.58% for *Gracilaria* that received 1ppm NH₄, 3.49% for *Gracilaria* without treatment, and 9.25% for initial *Gracilaria* sample. Crude protein greatly improved for *Gracilaria* that received 1ppm NH₄ (16.68%) compared to *Gracilaria* without treatment (13.46%).

In another experiment, ammonium excretion of abalone fed Diet 1, *Gracilaria* fed abalone, and *Gracilaria* fed big abalone peaked at 22 hours after feeding. Excretion rates however dipped 23 hours after feeding. Ammonium excretion even after 24 hours after feeding may be attributed to the reserved protein in the animal.

Biodiversity in the brackishwater ponds and the adjoining mangroves, rivers, and shores in Dumangas, Iloilo: species composition and volume of the pond by-catch in relation to natural seeding and farm management practices

An ocular survey of fauna in the ponds and the adjoining mangrove patch at the Dumangas Brackishwater Station (DBS) was conducted. Consultation was also made with the study leaders and pond technicians involved in the experiments or production runs in the DBS ponds. Specimens of aquatic animals from various DBS ponds and private farms were collected and identified to species. Biodiversity was found considerable despite the highly disturbed condition of the Dumangas coast. Mollusks were identified and many species of marketable fishes, small gobies, tenpounder, crabs, shrimps, and bivalves, etc. were found among the by-catch.

Water and Sediment Quality Monitoring at Igang Mariculture Park, Guimaras

Results of continuous monitoring of water and sediment quality at Igang Mariculture Park suggested that the area has not yet reached its carrying capacity.

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

4.1 Planning for the Program Activities

Project/Activity Title	Duration	Remarks
1. <i>Anodontia philippiana</i> and <i>Holothuria scabra</i> as bioremediators in an intensive cage culture system	January-December 2010	- continuation from 2009 proposal To test the capacity of <i>A. philippiana</i> in assimilating sulphide in anoxic, sulphide-rich sediments and the capacity of <i>H. scabra</i> in nutrient recycling and bioturbation of sediments.
2. Abalone/Seaweed culture in a recirculating system (Abalone/Seaweed culture in a recirculating system)	January-December 2010	-proposed project with mollusk program The project would like to use bioremediation of seaweeds when cultured together with abalone.
3. Biodiversity in aquaculture farms: marine cages	January-December 2010	-continuation of 2009 since the proponent is currently working on biodiversity of brackishwater ponds and the adjoining mangroves, rivers, and shores in Dumangas, Iloilo The planned activity will determine interactions among marine cage farmed species and the surrounding plants and animals and see if there is an optimum balance that minimizes adverse effects on the aquafarm and the ecosystem
4. Monitoring of the water quality of discharge water from the different SEAFDEC facilities and the shore fronting SEAFDEC.	January-December 2010	-a group will be created to monitor water discharge from SEAFDEC-TMS, headed by the proponent

5. Water and Sediment Monitoring at Igang Mariculture, Guimaras and other Mariculture Park	January-December 2012	-based on the result conducted for two years, monitoring will be done quarterly for the next years, however, monthly monitoring is needed for new mariculture sites. - include also sediment quality on other commodities aside from milkfish This continued project will be conducted every quarter to make sure that the receiving environment from the on-going mariculture activities will be maintained in good condition.
6. Determination of feed properties (sinking velocity, stability, and friability of feeds) used in mariculture activities	January-December 2010	-could be done together with water and sediment monitoring group
7. Development of Probiotics for Water and Sediment Treatment	January-December 2012	-possible collaboration with FFRC, China This project will isolate and develop indigenous probiotic such as efficient microorganisms and purple sulfur bacteria for water and sediment treatment on different water sources and conditions. Developed probiotics will be tested further as bioremediator on water and sediment (small scale and large scale) and its effect if any on growth and quality of cultured fishes.
Polyculture study	January-December 2012	-suggested by the Chief to be conducted by 2010

4.2 Expected Outcomes of the Proposed Projects/Activities

- 1) Capability of using biofilters in improving water quality examined.
- 2) Baseline information on interactions among farmed species and the surrounding plants and animals; Optimum balance that minimizes adverse effects on the aquafarm and the ecosystem
- 3) Development of techniques for monitoring water and sediments quality to maintain the good condition of receiving environment from any aquaculture farming
- 4) Determination of feed properties that would sustain and enhance the good aquaculture environment by minimizing aquaculture waste
- 5) Development of probiotics that would alleviate problems on aquaculture wastewater without further introducing any impacts on the environment

Annex 5

**PROGRAMS UNDER THE FISHERIES CONSULTATIVE GROUP OF
THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (FCG/ASSP) MECHANISM
FOR THE YEAR 2009-2010**

Project Titles	Lead Department	2009	2010
Support to the Implementation of the Code of Conduct for Responsible Fisheries	SEC	Y	N
Assistance for Capacity Building in the Region to Address International Trade Related Issues	SEC (TD)	Y	Y
Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region	SEC	Y	N ⁸
Environmental Related Tasks in Southeast Asia	SEC	Y	N ⁹
Support to Tsunami Rehabilitation of Affected Countries New Title: Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea”	SEC	Y	Y
Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region	SEC	Y	Y
Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region	SEC	Y	Y
Information Collection of Highly Migratory Species in Southeast Asia Waters	SEC (TD)	Y	Y
ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 (NEW)	All Dept	N	Y
Responsible Fishing Technologies and Practices (Fishing in Harmony with Nature)	TD	Y	N ²
Sustainable Utilization of Potential Fisheries Resources and Reduction of Postharvest losses	TD	Y	Y
Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty	TD	Y	N
Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2	TD	Y	Y
Deep Sea Fisheries Resources Exploration in the Southeast Asia	TD	Y	Y
Development of Regional Database for Fishery Management	TD (SEC)	Y	Y
Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management	TD	Y	Y
Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement (NEW)	TD	N	Y ¹⁰

⁸ Starting from 2010, the project activities will be merged under the Development of Regional Database for Fishery Management, leading by TD

⁹ Starting from 2010, the project activities will be merged under the Assistance for Capacity Building in the Region to Address International Trade Related Issues, leading by SEC

¹⁰ This project will be linked to new Projects on “Rehabilitation of fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement” leading by TD and “Resource enhancement of international threatened and over-exploited species in southeast Asia through stock release” leading by AQD.

Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries	MFRD	Y	N
Chemical and Drug Residues in Fish and Fish Products in Southeast Asia: (Biotoxin Monitoring ¹¹)	MFRD	Y	Y
Traceability Systems for Aquaculture Products in South Asian Region (NEW)	MFRD	N	Y
Development of Technologies and Human Capacity Building for Sustainable Aquaculture	AQD	Y	N
Development of Fish Disease Surveillance System	AQD	Y	N
Research and Development (R&D) on Stock Enhancement for Species under International Concerns	AQD	Y	N
Promotion of Sustainable and Region-oriented Aquaculture (NEW)	AQD	N	Y
Resource Enhancement of International Threatened and Over-Exploited Species in Southeast Asia through Stock Release (NEW)	AQD	N	Y
Accelerating Awareness and Capacity-building in Fish Health Management in Southeast Asia (NEW)	AQD	N	Y
Food Safety of Aquaculture Products in Southeast Asia (NEW)	AQD (MFRD)	N	Y
Research for Stock Enhancement of Sea Turtles	MFRDMD	Y	N ¹²
Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea	MFRDMD	Y	Y
Research and Management of Sea Turtles in Foraging Habitat in the Southeast Asia Waters (NEW)	MFRDMD (TD)	N	Y
Non-Funded Programs			
Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement	TD	N	Y ¹³
The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region	MFRDMD	N	N
Development of Integrated Inland Fisheries Management in ASEAN Countries	MFRDMD	N	N
Utilization of Freshwater Fish in ASEAN Member Countries	MFRDMD	N	N
Good Laboratory Quality Management in ASEAN Member Countries	MFRD	N	N

¹¹ Starting from 2010, the project will focus only on “Biotoxin Monitoring”

¹² This project will terminate in 2009, however a new project on “Research and Management of Sea turtles in foraging Habitat in the Southeast Asia Waters” will be started from 2010, leading by MFRDMD in collaboration with TD (as seen in the WP03e-iii)

¹³ This project will be linked to new Projects on “Rehabilitation of fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement” leading by TD and “Resource Enhancement of International threatened and Over-exploited Species in Southeast Asia through Stock Release” leading by AQD.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Support to the Implementation of the Code of Conduct for Responsible Fisheries
Lead Country:	Indonesia
Lead Department:	SEAFDEC Secretariat in collaboration with all Departments
Total Duration:	To be ended at the first quarter of 2009

1. INTRODUCTION

Since the adoption of the Code of Conduct for Responsible Fisheries (CCRF) in 1995, SEAFDEC supports the implementation of the CCRF and upholds the general principles and standards provided therein. To fulfill this obligation and to introduce the CCRF in Southeast Asia, SEAFDEC, as a premier fisheries center in the region with a long-term commitment to sustainable development and management of the region's fisheries and coastal resources, has initiated a comprehensive program known as the Regionalization of the Code of Conduct for Responsible Fisheries. As the principles are well accepted, although not fully implemented, suggestions have been made to change the program title to "Support to the Implementation of Code of Conduct for Responsible Fisheries"

2. PROGRAM

2.1 Objectives

The main emphasis during 2008-2009 is to maintain the momentum of the achievements under the SEAFDEC-Sida collaborative project, with the following objectives:

- 1) Promote continued and increased interest for regional and sub-regional cooperation;
- 2) Initiate and continue process on establishment of fisheries resources conservation areas (*refugia*);
- 3) Initiate a process to monitor and record fishing capacity;
- 4) Provide background information for habitat and fisheries management
- 5) Address fishing capacity through studies and consultation

2.2 Program description

Activities during 2008 until the first quarter of 2009 was extended phase that built upon results achieved through the Swedish supported since 2003. The process of implementation is to support trends among ASEAN and SEAFDEC Member Countries to come to agreement among the countries on matters of importance to fisheries management, such as fishing capacity, conflicts, fish resources conservation areas, etc. and in the short to medium term perspective support the establishment of a regional fisheries management mechanism.

The activities in 2008-2009 focused primarily on the Gulf of Thailand but also the South China Sea and Sulu Sulawesi Seas. In addressing the management mechanism, regional cooperation, fishing capacity, vessel registration, etc the whole region would be in focus. Continued coordination among regional, international and national organizations and initiatives, such as ASEAN, FAO/APFIC, UNEP/GEF/SCS, MRC, RPOA, NACA and Wetlands Alliance was maintained during the years with a base in the ASEAN Fisheries Consultative Group framework under the ASSP.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008-2009

The years 2008-2009 are considered as extension or bridging years, the activities were implemented under the following set of seven headlines: a) process to promote establishment of regional fisheries management body/mechanism; b) integration of fisheries into habitat management; c) incentive for environmental friendly fisheries/eco-labels; d) understand the size and structure of large-scale fisheries; e) systems to monitor and record coastal fisheries; f) local knowledge and safety at sea; and g) project management and coordination.

Major achievements and progress of works in 2008-2009 can be highlighted as follow:

Promote Establishment of Regional Fisheries Management Body

In promotion of sub-regional arrangements in the Gulf of Thailand, SEAFDEC organized two events in Bangkok, 28-29 March 2008, followed by the second meeting in 24-26 February 2009 where the participating countries (Cambodia, Malaysia, Thailand and Vietnam) agreed to move ahead with MCS Network, starting with a vessel record and inventory.

The progress on the regional management with support from Sweden, SEAFDEC together with Department of Fisheries, Thailand (lead ASEAN country for the process) organized the “Preparatory Meeting of the ASEAN Fisheries Consultative Forum (AFCF), 26-27 May 2009, in Bangkok, Thailand to work out activities and workplan.

Habitat and Fisheries Management

Discussion on sub-regional cooperation for the establishment of larger fisheries resources conservation areas (*refugia*) among the countries around the Gulf of Thailand, SEAFDEC held the events in Bangkok during March 2008 and February 2009, respectively on common approaches to the need for conservation measures for the Indo-Pacific Mackerel.

To review aspects related to the interconnectivity, the project supported the Conference on “Habitat for Fisheries, Aquaculture and Fisheries Management- addressing interconnectivity” at Maejo University in Chiang Mai, 8-9 December 2008.

Incentive for sustainable fishing/eco-labels

On 30 January 2009, the project supported one day seminar that brought FAO, Marine Stewardship (MSC), SGS, Department of Fisheries, SEAFDEC and Abba Seafood, Sweden, The Seminar provided a good indication that the approach taken by the project together with recommendations provided was sound. It was stated that Tonggol Tuna could be another candidate species to be considered species.

Size and structure large-scale fisheries: Monitor and record coastal fisheries

To follow up the recommendations made at the Expert Meeting on Fishing Vessel Registration in 2008, the forms to initiate the process to find out modalities to create a “record and inventory” proposed at GOT Meeting in March 2009.

To monitor-control-record, SEAFDEC-Sida project provided the venue to have the dialogue among the countries on the main key issues on MCS including IUU fisheries and recommendation on the practical aspects and actions needed in monitoring fishing activities. The discussion also included the fishery law and legal matters that recommended by SEAFDEC Council (April 2008), this provided an opportunity for legal officers from Four Gulf of Thailand Countries to review relevant legal frameworks to the agenda of the Second GOT Meeting.

Local knowledge and safety at sea

With the promotion of the sub-regional and regional dialogue on vessel record and inventory, SEAFDEC-Sida project together with ASEAN Member Countries developed two survey forms for establish the process of information sharing, where it will be further developed for new SEAFDEC-Sida project.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Assistance for Capacity Building in the Region to Address International Trade Related Issues
Lead Countries: Thailand
Lead Department: SEAFDEC Secretariat (in collaboration with TD)
Total Duration: 2010-2012

1. INTRODUCTION

Recognizing the issues on trade in fish and fish products are greatly discussed and driven by international market and by various organizations, which rarely involve from fisheries authorities and sometimes lack of contribution to sustainable fisheries development and management aspects. A number of international instruments have been agreed or enforced by international organizations could determine impacts on sustainable development of fisheries in the Southeast Asian region, particularly developing countries and small-scale fisheries sub-sector. In accordance to this, it is important to reconcile the international driven issues with the promotion on sustainable fisheries development.

For 2010, the international driven issues are categorized into 3 main activities as follows;

- 1) International fish trade related issues
- 2) Environmental Talk related issues, which focused on the CITES and
- 3) Concerning the responsible fishing technology and practice to mitigate the impact on habitat and resources which are main key to conserve for sustainable development of fisheries at regional level.

2. OBJECTIVES

- 1) To monitor and review potential international fish trade related issues, environment related task and implementation of responsible fisheries;
- 2) To identify and analyze potential impacts of international fish trade related issues and environment related task on sustainable fisheries development in Southeast Asia;
- 3) To identify and continue to improve on responsible fishing technology and practices in the Southeast Asia;
- 4) To develop regional policy recommendation on international fisheries related issues for ASEAN-SEAFDEC Member Countries; and
- 5) To promote responsible fishing technologies and practices through the introduction, demonstration, experiment and training in fishing gear selectivity and devices to reduce the capture of juveniles of commercial species, trash fish and by-catch of endangered species. In addition, reduction of mortality of threatened species such as sea turtles and animal due to interactions with fisheries is also included in the study.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

The main activities in 2009 are as follows:

- 1) The Regional Technical Consultation on International Fisheries Related Issues (2009) was organized from 10 to 12 February 2009 in Bangkok, Thailand. The Consultation was attended by national delegates from the ASEAN and SEAFDEC Member Countries, ASEAN Secretariat, the resource persons from the Directorate-General of Maritime Affairs and Fisheries of the European Commission (EC), the Faculty of Economics of Kasetsart University. The priority issues to be discussed, including the EC Regulation to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated (IUU) Fishing; the FAO Legally-binding

Instrument on Port State Measures for Combating IUU Fishing; Small-scale Fisheries; Refinement of the Required Adaptive Measures and Proposed Activities to Mitigate the Impacts of Climate Change; Aquaculture Certification; Fisheries Subsidies and the Implementation of the United Nations General Assembly (UNGA) Resolution 61/105 (Paragraph 83-87). In addition, due to the recent economic crisis worldwide, a regional direction of the fisheries sector to respond to such situation would also be explored.

- 2) The in-depth study on the impact has being made based on the questionnaires sent to all ASEAN countries
- 3) Participation to the FAO-COFI Meeting held from 2-6 March and the 2nd Meeting of Regional Fisheries Bodies Secretariat Network from 9-11 March 2009, with the aims to provide regional inputs based on the regional technical consultation outcomes and regional common/coordinated positions. As well as to support SEAFDEC Member Countries on the intervention for regional common positions at the COFI Meeting. SEAFDEC was selected as the vice chair of the 2RSN, which focus on the promotion of the Small Scale Fisheries.
- 4) Participation to the 2nd Resumed Session of the FAO TC on Legally Binding of the Port State Measures from 4-8 May 2009 in FAO/Rome. The aims are to update the status of the Legally Binding of the Port State Measures and observe the negotiation process by the States.
- 5) Participate to International Fisheries, Trade Related issues.
- 6) Inventory on the Regional Technical Consultation on International Fisheries Related Issues
- 7) Publications on the 2009 Regional Coordinated Position relating to the International Fisheries Related issues.

Project/Activity Title	Duration	Remarks
Activity: International Fish Trade Related Issues		
1. Regional Technical Consultation • Regional Technical Consultation on International Fisheries Related Issues (2009)	10-12 Feb 09	
2. In Depth Study on the Issues Identified by the RTC Consolidation of coordinated positions	Jan-Feb 09	
Participation to Relevant International Fora • Participated to the FAO-COFI Meeting • Participated to 2nd Meeting of Regional Fisheries Bodies Secretariat Network • Participated to the 2nd Resumed Session of the FAO TC on Legally Binding of the Port State Measures	2-6 March 09 9-11 March 09 4-8 May 09	
4. Production of Promotional Brochure and materials for Support the Member Countries • Executive summary of the International Fisheries Related Issues 2008-9	April –May 09	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Proposed Activities for 2010

Program/Project /Activities	J	F	M	A	M	J	J	A	S	O	N	D
Activity 1												
1.1 Regional Technical Consultation												
• Regional Technical Consultation												
1.2 In Depth Study on the Issues Identified by the RTC												
• In-Depth Study on the Issues Identified by RTC												
1.3 Participation to Relevant International Fora; FAO												



<ul style="list-style-type: none"> • Consolidation of coordinated positions • 12th Session of FAO Sub-Committee on Fish trade • Conference on world aquaculture • World Conference on Small Scale Fisheries 				X															
1.4 Production of Promotional Brochure and materials for Support the Member Countries																			
<ul style="list-style-type: none"> • Production of Promotional Brochure and materials for Support the Member Countries 																			
Activity 2																			
2.1 Monitoring and Participation to Inter' for a																			
<ul style="list-style-type: none"> • Monitoring the Progress on NPOA-Shark • Participation to CITES COP-15 					X														
2.2 Regional Expert Meeting on CITES species																			
<ul style="list-style-type: none"> • No activity (upon request/urgent need) 																			
2.3 Regional Synthesis on concerned species < CITES>																			
<ul style="list-style-type: none"> • In-Depth Study on the Issues Identified by the Member countries, • Consolidation of coordinated positions 																			
2.4 Production of Promotional Brochure and materials for Support the Member Countries																			
<ul style="list-style-type: none"> • Production of Promotional Brochure/ materials 																			
Activity 3																			
3.1 Technical assistance of selective fishing gears and devices for reduced discards and by-catch of juvenile and trash in the region																			
<ul style="list-style-type: none"> • Workshop on discards and by-catch Management 																			
<ul style="list-style-type: none"> • Technical assistance on gear selectivity and devices 																			
3.2 Technical Assistance of the assessment of the impacts of various kinds of fishing gear and practice on fisheries resources, sea beds, environment and ecosystem																			
<ul style="list-style-type: none"> • Technical assistance on impacts of light fishing on fisheries resources in Southeast Asia 																			
<ul style="list-style-type: none"> • Technical assistance on impacts of bottom trawl net, dredges, traps and others 																			
3.3 Interaction between threatened species of international concern and fisheries																			
<ul style="list-style-type: none"> • Information collection on interaction of endangered species and fisheries 																			
<ul style="list-style-type: none"> • Participation in international meetings for information exchange on interaction of endangered species and fisheries 																			
3.4 Production of promotion materials and technical papers																			
<ul style="list-style-type: none"> • Production and dissemination of information package 																			

4.2 Expected Outcomes

- 1) Executive Summary on the international fish trade related issues for 2009-10 including the regional policy recommendation on international fisheries related issues for ASEAN-SEAFDEC Member Countries,
- 2) Updated environment task related issues in particular the list of CITES-species;
- 3) To promote responsible fishing technologies and practices

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region
Lead Department:	SEAFDEC Secretariat
Lead Country:	Thailand
Total Duration:	2007-2010

1. INTRODUCTION

Fishery statistics, data and information in fisheries which generally also include registration, records, reporting, census and surveys, and other data and information including indicators; use of advanced information technology and database that are derived either from routine and non-routine system are widely accepted as basis and being crucial for determination of national fisheries policies, formulation of national management frameworks and actions or even basis for understanding the status and condition of fisheries resources.

SEAFDEC plays a prominent role in fishery statistics in Southeast Asia and has been assembling regional fishery data and information for many decades. SEAFDEC's support and direction on improvement of fishery statistics in the region are strengthening national fishery statistical systems, maximize their use for fisheries planning and management, and develop standard definitions and classifications to facilitate regional fishery statistics and information exchange. SEAFDEC is currently implementing a number of collaborative programs/projects and initiatives related to data and information on fisheries in the region to support Member Countries in improving statistics, data and information for management and planning of fisheries. However, the implementation of activities and outcomes from each project was planned in isolation resulted in lacking of focus in the improvement of data and information collection, analysis and presentation that lead to the lack of their usage for effective planning and management of fisheries.

It was found that there are still many issues and constraints under current situation in relation to the usage of quality fishery statistics, data and information to support development planning and management of fisheries. They are *i.e.* framework and direction are not well coordinated and implemented; lack of shared objective and direction to complement each other; need of clear objectives and usage at various levels; statistics for management requirements; and linkages and coordination between routine and non-routine data collection. In addition, problems still exist on quality, timeliness, accuracy of data and information for maximizing their usage for effective planning and management.

SEAFDEC recognized the importance of better understanding and knowledge of fisheries in the region for development planning and management of fisheries to achieve sustainable fisheries and food security purposes. To fulfill this goal, it is generally noted that fishery statistics, data and information are important foundation which required improvement of better national fishery statistical system in terms of quality, availability, reliability, accuracy and timeliness of statistics in line with the minimum requirements and the regionally standardized definitions and classifications for fishery statistics to facilitate regional compilation, analysis and data exchange, as well as ways and means to present information in user-friendly manner for management and decision-making. In addition, data and information from other sources are also crucial important that linkage and integration and harmonization should be promoted in maximizing its utilization for effective planning and management of fisheries.

Under the 3-year ASEAN-SEAFDEC FCG program on Fishery Statistics and Information supported by the Japanese Trust Fund (2007-2009), the program achievements were accomplished with the development of Regional Framework for Fishery Statistics of Southeast Asia, comprising standard definitions, and classification of fishery statistics and information; Streamlined Reporting of Fishery Statistics from the Member Countries to FAO and SEAFDEC; and development of National Status and Trends (STF) of Fisheries and Aquaculture to enhance capacity of the Member Countries in development, integration, and maximizing usage of data and information available for development planning and management of fisheries. In addition, there are a number of sets of data and information including databases developed as the results from previous SEAFDEC's projects implementation.

Currently SEAFDEC is continuing implementation a number of collaborative programs/projects and initiatives related to data and information on fisheries in the region to support Member Countries in improving statistics, data and information, including development of databases as tools for management and planning of fisheries. More importantly, to support the implementation of the Regional Advisory Committee on Fisheries Management (RAC) in providing technical/scientific advice to the SEAFDEC Council for the improvement of fisheries management in Southeast Asia, fishery information and statistics will play a key important role to facilitate the review and assess the current status of the fishery resources in particular transboundary fish stocks, *e.g.* pelagic fisheries resources, the status of fishing industries in the region, as well as emerging issues requiring supporting data and information, etc.

This program then formulated to continue strengthen support and assistance to the Member Countries to address these issues to better utilization and harmonized information to support development planning and management of fisheries through facilitating cooperation in the region both at national and regional levels by mobilizing data and information from various sources and projects. The project will build on top from the past achievement and develop the linkage/coordination and integration of existing data and information for maximizing its utilization for planning and management of fisheries at national and regional level while maintaining the linkage and cooperation in the harmonization of norms/standards definitions and classifications of fishery statistics and information at regional and international levels.

2. PROGRAM

2.1 Objectives

The overall objective of the project is to improve better understanding and knowledge of fisheries and aquaculture in the region by maximizing usage of data and information for fisheries management, which can be achieved through development of status and trends of fisheries and aquaculture in the region based on effective utilization and harmonization of information for fisheries management at national level under the harmonized definitions, standards and classification of fishery statistics at regional level. The specific objectives are as follows:

- 1) To improve better knowledge of fisheries for development planning and management through development of status and trend of fisheries and aquaculture in Southeast Asia;
- 2) To streamline reporting of fishery statistics from the Member Countries to SEAFDEC and FAO through the new framework of SEAFDEC Fishery Statistical Bulletin of Southeast Asia;
- 3) To harmonize definitions, standards, and classification of fishery statistics and information to facilitate data sharing and exchange in the region;
- 4) To improve better utilization and harmonize information from projects implemented by SEAFDEC for fisheries management in Southeast Asia; and

- 5) To enhance capacity of the Member Countries in development, integration and maximizing usage of data and information for development planning and management of fisheries through the process, mechanism and outputs to promote in country coordination and inter-countries coordination based on dialogues among agencies and countries concerned.

2.2 Program description

The project will support the Member Countries in achieving sustainable fisheries objectives based on sound fisheries policies and management strategies that will be derived from quality statistics, data and information. The project aimed to address these issues to better utilization and harmonized information to support development planning and management of fisheries through development of status and trend of fisheries and aquaculture, through facilitating cooperation in the region both at national and regional levels by mobilizing data and information from various sources. The project will be implemented in collaboration with regional and international organizations.

Based on past achievement and experiences in supporting the Member Countries in improvement of fishery statistical systems, the project will build on top from the past achievement and develop the linkage/coordination and integration of existing data and information for maximizing its utilization for planning and management of fisheries at national and regional level.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
Component 1: Streamline Reporting of Fishery Statistics from the Member Countries to FAO and SEAFDEC through the new framework of SEAFDEC Fishery Statistical Bulletin of Southeast Asia		
<i>Activity 1.1: Streamline Reporting of Fishery Statistics from the Member Countries to key partner agencies and SEAFDEC through harmonized questionnaires</i>		
The process to Streamlined Reporting of Fishery Statistics in Southeast Asia will be continued, making use of the regional framework and questionnaire developed.	Jan.- Oct.	Completed
Database on fishery statistics in Southeast Asia based on the Framework will be developed to facilitate data reporting and query and analysis on status and trend of fisheries	Jan.- Oct.	On-going Continue developing database on fishery statistics in Southeast Asia based on the Framework to facilitate data sharing, reporting and query and analysis on status and trend of fisheries. It is expected that the database will be ready by December and could be accessed by the public through SEAFDEC Website
New set of Questionnaires that harmonized with FAO will be dispatch to the ASEAN Member Countries. And outcomes of returned statistics and the process for compilation and analysis need to be monitored and follow-up in 2009 and beyond.	Jan.- Oct	On-going New set of Questionnaires that harmonized with FAO was dispatched to the ASEAN Member Countries in April. The completed questionnaires received from some Member Countries and shared with FAO for further compilation.

Component 2: Harmonization of Standards/Norms, Classification and Definition of Fishery Statistics and Information in the Region		
<i>Activity 2.1: Participation in relevant international, regional and national development of standards, norms, classification and definition for fishery statistics and information at the international and regional levels</i>		
SEAFDEC will represent the region to participate in the CWP Meeting and FIRMS Steering Committee Meeting to provide inputs in the development of standards/norms, improving better analysis and presentation; as well as to discuss and follow-up on-going/new issues/initiatives related to data and information for fisheries management that are concerned for the region.	Jan.- Oct.	On-going
Component 3: Status and Trends of Fisheries and Aquaculture in Southeast Asia (STF)		
<i>Activity 3.1: Visits the Member Countries for the Planning Consultation and Following-up work</i>	Jan.-Oct.	
<i>Philippines:</i> Follow-up the Report of National STF.		Completed
<i>Thailand:</i> Monitor the progress of work on the Draft National STF Report (in Thai and English) and participate in the National Workshop on National STF Thailand to discuss and conclude the activity.		Completed The National Workshop on STF Thailand was organized from 28-29 January 2009 (postponed from December 2008).
<i>Indonesia:</i> Follow-up and finalize the proposal as well as formalization of the activity; and involve in the process to develop National STF by participate in the National Consultation.		Completed The visit to Indonesia was made to follow-up development work on National STF; and participation to the Meeting on "Fisheries Statistics for Policy-making Process", 10-12 March 2009.
<i>Activity 3.2: Identification of national focal points/experts</i>		
Appointment of the National Focal Points of Pilot Countries	Jan.-Mar.	Completed
<i>Activity 3.3: National Consultations</i>		
National Workshop to conclude the National STF of Indonesia	Jan.-Oct.	Completed The National Workshop on STF Indonesia was conducted and concluded the National STF Report
<i>Activity 3.4: Regional Technical Consultation</i>		
The Regional Technical Consultation (RTC) will be organized to present, discuss and conclude the outcomes of the National STF of 3-4 pilot countries experience. The direction and recommendation for future development of STF at regional level will be identified. The Consultation will also assess the current status and improvement of fishery statistics system of the ASEAN Countries.	Nov.	On-going The RTC will be postponed to organize in January 2010 in Bangkok, Thailand

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

Project/Activity Title	Duration
<p>Component 1: Improve better utilization and harmonized information from projects implemented by SEAFDEC for fisheries management in Southeast Asia</p>	
<p><i>Activity 1.1: Improve better utilization and harmonized information from projects implemented by SEAFDEC for fisheries management in Southeast Asia</i></p> <p>The current implementation of activities and outcomes from a number of collaborative programs/projects and initiatives related to data and information on fisheries in the region by SEAFDEC were planned in isolation resulted in lacking of focus in the improvement of data and information collection, analysis and presentation that lead to the lack of their usage for effective planning and management of fisheries. To support the Member Countries in improving data and information as tools for development planning and management of fisheries, this project will lead in coordination and harmonization of framework/standard/norms for data collection and analysis; and collating data and information to be shared and exchanged through development of linkage and coordination of data and information for management and participation to the Consultations/Meetings of relevant projects and mobilize data and information for development of interface of all databases from SEAFDEC projects as tools for fisheries management; as well as mobilizing those data and information as input for the Status and Trend of Fisheries and Aquaculture in Southeast Asia.</p> <ul style="list-style-type: none"> - Coordination of work and participation in the Consultations/Meetings of relevant projects to provide guidance and framework for data collection and utilization for fisheries management based on the Regional Framework - Develop interface to link all databases developed from SEAFDEC projects at the website as tool for fisheries management 	Jan.– Dec.
<p>Component 2: Harmonization of Standards/Norms, Classification and Definition of Fishery Statistics and Information in the Region</p>	
<p><i>Activity 2.1: Harmonization of Standards/Norms, Classification and Definition of Fishery Statistics and Information in the Region</i></p> <p>To reflect regional uniqueness and specificity of fisheries in the region to support fisheries management relevant to Global and Regional Initiatives/fora; as well as to harmonize with on-going and development of regional and national development, SEAFDEC needs to continue participation in the international development of standards/norms, classification and definition for fishery statistics and information for fisheries management at the international level <i>i.e.</i> the 23rd Meeting of the Coordinating Working Party on Fishery Statistics (CWP) and the 6th Meeting of Steering Committee of the Fisheries Resources Monitoring System (FIRMS).</p> <ul style="list-style-type: none"> - Participation to the 23rd Meeting of the Coordinating Working Party on Fishery Statistics (CWP) and the 6th Meeting of the Fisheries Resources Monitoring System (FIRMS) Steering Committee 	Jan.-Dec.
<p>Component 3: Development of the Status and Trends of Fisheries and Aquaculture in Southeast Asia (SEASOFIA)</p>	
<p><i>Activity 3.1: Status and Trends of Fisheries and Aquaculture in Southeast Asia (SEASOFIA)</i></p> <p>This activity aimed to develop the status and trends of fisheries and aquaculture in Southeast Asia (SEASOFIA) as basis for development planning and management of fisheries of the region, mobilizing experiences and lessons learnt and directions from project activity on development of National Status and Trends of Fisheries and Aquaculture for 3 pilot countries implemented during 2007-2009, and coordinated work and involvement in data and information from SEAFDEC's projects relevant to fisheries management. This SEASOFIA will present status and trend of fisheries resources and clarifying emerging issues important of the region for future consideration and direction to be tackled.</p> <ul style="list-style-type: none"> - Develop Status and Trends of Fisheries and Aquaculture in Southeast Asia (SEASOFIA) 	Jan.-Dec.

4.2 Expected Outcomes

- 1) Streamlined data reporting from the Member Countries to SEAFDEC and FAO, including the harmonized questionnaires;
- 2) Norms/standards definitions and classifications of fishery statistics and information better harmonized, and issues/areas of regional uniqueness and specification harmonized at regional and international levels;
- 3) Improve utilization and harmonized information from projects implemented by SEAFDEC relevant to fisheries management in Southeast Asia;
- 4) Status and trends (STF) of fisheries and aquaculture in Southeast Asia;
- 5) Interface to link of all databases developed from SEAFDEC projects at the website as tool for fisheries management; and
- 6) Human capacity of the Member Countries particularly the less developed countries in using the regional fisheries statistics and databases enhanced.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Environmental Related Tasks in Southeast Asia
Lead Department: SEAFDEC Secretariat
Lead Country: Thailand and Malaysia
Total Duration: 2003-2009

1. INTRODUCTION

In response to the 12th Meeting of the Conference of Parties of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in November 2002 with regards to adopted proposal of some shark species to be listed under the CITES scheme, SEAFDEC then with close collaboration of the Member Countries have undertaken several positive move in view to safeguarding the interest this region. As envisioned earlier, the 13th Meeting of the Conference of Parties (COP13) of CITES in Bangkok, Thailand (2-14 September 2004) and COP 14 of CITES in Hague, Netherlands (3-15 June 2007), has deliberated and debated the issues of shark at greater length. As well as the issue on sea cucumber in commercial species have also been critically taken into discussion at the CoP14 of CITES especially the number of commercial species under families Holothuriidae and Stichopodidae, in which strongly required to serve the international market demand. These have proven the increasing interest of shark issues globally which ultimately gained similar interest of this region. To support the Member Countries for management approach for the shark and sea cucumber issues either national or regional level, therefore the project has been promoted since 2003 through regional technical (or expert) consultations and in-depth studies on status and trends of sharks and sea cucumbers fisheries and utilizations, and etc.

The year of 2004 has witnessed significant accomplishment undertaken by SEAFDEC in collaboration with its Member Countries to seriously address this issue inter alia the successful 2nd ASEAN SEAFDEC Regional Technical Consultation (RTC) on Shark Fisheries from 13-15 July 2004 in Phuket, Thailand. The RTC has reaffirmed the common positions of the ASEAN-SEAFDEC Member Countries on the conservation and management of sharks, among of the them are (1) Management of commercial fisheries should come under purview of FAO not CITES, (2) Any listing proposal, undermining sustainable exploitation and management of aquatic resources in the Member Countries, should not be supported, (3) The Member Countries agreed to establish National Plan of action on Sharks (NPOA-Sharks) in line with the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) supported by best scientific evidence, by January 2005 (4) Representative(s) of national fisheries agency of the ASEAN-SEAFDEC Member Countries should be included in the national delegation to CoP-CITES, and (5) Close coordination between national fisheries agency and national competent authority for CITES should be strengthened to facilitate any preparatory work for CoP-CITES.

2. PROGRAM

2.1 Objectives

For 2009 the project objectives are mainly continued to assist Member Countries by monitoring the issues on particularly sharks, sea cucumbers and other endanger species (related in the region) at international level especially potential species of under CITES as well as to continuously publicize the effort of this region in conservation and management of sharks, sea turtles, and sea cucumbers. Development of the NPOA-Shark by Member Countries will also be monitored.

2.2 Program description

2.2.1 Managing shark fisheries

Currently, there are several countries such as Brunei, Malaysia, Myanmar, Indonesia, Thailand, have finished a draft NPOA-sharks, while the rest are still developing stage of NPOA formulation. In order to maintain the momentum of conservation and management of sharks, SEAFDEC will monitor the progress development of NPOA-sharks and facilitate on technical guidance for the Member Countries. As far as the proposed shark listing species under CITES has being raised by several countries, SEAFDEC will also pay attention on the issue at the international level and when appropriate informing the Member Countries. In addition, the regional synthesis on the Shark and Ray fisheries in the Southeast Asia will be progressed in this year.

2.2.2 Understanding sea cucumbers fisheries

In ASEAN Region, sea cucumbers nonetheless have clearly represented an important fisheries; lack of attention to the management of these species; and their fisheries status is unknown. Along this line the Member Countries, at the ASEAN-SEAFDEC Regional Technical Consultation on International Fisheries Related Issues on 18 September 2006, in Phuket, Thailand, reaffirmed the directions provided by the Council at the 38th Meeting and support the conduct of regional study on sea cucumbers fisheries, utilization and trade in Southeast Asian Region. It is expected to proceed in December 2006 by the national expert of each country. Meanwhile, the national expert was mobilized as a regional expert group on sea cucumbers fisheries for planning and coordination work on status, resources utilization, management and trade in order to assess possibility in the development of country's initiative or action plan and policy recommendation. The regional study on sea cucumbers fisheries, utilization and trade in Southeast Asian Region was begun in December 2006. Based on this desk study could equip the Member Countries in their preparation on the COP-14 in year 2007. The full paper on Regional Synthesis on Sea cucumbers was completed in 2009.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
1. Monitoring Progress of Development NPOA-sharks and Regional Study on Sea Cucumbers - Monitoring the progress in Vietnam - Monitoring the progress in Philippines	2009 November December	Vietnam, the Philippines, Cambodia are in developing process
2. Regional Expert Meeting on CITES Species	-	No activity
3. Regional Synthesis on Shark Fisheries	April - December	Completed Finalized for Printing
4. Participation to other Relevant Regional/International Fora		No activity
5. Production of Promotional Brochure and Materials for Support the Member Countries	Feb.-Nov.	100%

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

This project is to be terminated at the end of 2009, however, the activity on Monitoring the CITES issues will be continued under the SEAFDEC Program on "Assistance for Capacity Building in the Region to Address International Trade Related Issues"

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism

Program Title: Support to Tsunami Rehabilitation of Affected Countries (New Title: Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea)
*** Cross reference to ASEAN-SEAFDEC work on responses to climate change*

Lead Country: Thailand

Lead Department: SEAFDEC Secretariat (in collaboration with all Departments)

Total Duration: 2009-2011

1. INTRODUCTION

Many coastal communities are facing, and will be facing, increased unpredictability of natural hazards such as cyclones and storm surges that in severe cases causes deaths of fisher-folk including loss of fishing and aquaculture assets and related onshore infrastructure. This in turn reduces the ability of households to earn income and sustain livelihoods as was experienced from the Tsunami and the cyclone Nargis. The effects of these natural events directly relate to the life of local fishermen and their families, to fisheries resources, to the environment and to important habitats. The impacts of the more frequent and intense natural hazards should be recognized together with changes in their pattern due to climate change. The experiences from the larger scale disasters should be brought forward in terms of showing the increased vulnerability to coastal communities and coastal resources due to depletion of resources and destruction of important coastal habitats (mangroves, coral reefs, sandy beaches, etc).

The importance to restore some of these bio-geographical features should be highlighted both in terms of the protection it provides – and to ensure healthy habitats for spawning and nursery to maintain the fisheries resources.

In the process of implementation the basic strategy is to build upon expressed needs, including the perspective of possible impacts of climate change, to improve management of fisheries, fishing capacity and to better manage coastal environments, including coastal restoration as needed, as a protection against future hazards while at the same time provide an important element to the sustainability of the fisheries by securing important habitats. Throughout the process of implementation training sessions will be organized. The general approach to be taken is to integrate fisheries and habitat management, address fishing capacity, illegal fisheries and to pro-actively aim towards longer –term management responses including cooperation and regional and sub-regional arrangements among countries in the ASEAN region. Co-ordination among regional, international and local organizations is another pillar of the project strategy, including institutions that are concerned with environment and conservation issues, as well as those mandated to consider the production and sustainable use of the natural resources and fisheries in the region.

2. PROGRAM

2.1 Objectives

Goal/Development Objective

Long-term sustainability of fisheries, reduced vulnerability to impacts of climate change and improved livelihoods of fisher-folk in the ASEAN region, and around the Andaman Sea.

Immediate Objectives

- 1) Capacity for the management of fisheries and important coastal habitats (*refugia*) and the protection against natural hazards built up around the Andaman Sea (integration of habitat and fisheries management).
- 2) Capacity strengthened and systems improved to monitor, record and control active fishing effort (large and small scale) as a basis for development for coordinated plans for management actions on fishing capacity around the Andaman Sea and among ASEAN-SEAFDEC Member Countries (to prepare for adaptive measures needed to respond to impacts of climate change)
- 3) To provide support to policy development and the process to establish a regional fisheries management mechanism and sub-regional agreements for/in the ASEAN region including reached consensus on key issues

2.2 Program description

In the process of implementation four main aspects that have been highlighted in various *fora* will be addressed and incorporated in the process:

- 1) The vulnerability of poorer coastal communities to natural hazards and the risk of them being (further) marginalized during the restoration process.
- 2) Fishing capacity.
- 3) Maintaining geographical features in the coastal areas, recognizing the importance of features (mangroves, corals, dunes, etc.) in the coastal areas for protection against natural hazards needs to be assessed as well as for fish reproduction.
- 4) Local knowledge and local organization: Several reports have pointed at the way in which certain coastal communities, based on their traditional knowledge, are facing less damage by natural hazards than other communities.

3. PROGRESS OF ACTIVITIES IN YEAR 2009

Note: In the progress reporting, some events taken place during the first quarter of 2009 under the old SEAFDEC-Sida Project is also to be referred here, especially the Second Gulf of Thailand Meeting (February 2009), has been used as a reference to work implemented under the new Agreement (2009- 2011) with Sweden.

3.1 Integration of fisheries and habitat management

There is increased attention to the need to apply ecosystems based approaches to management on marine and inland water bodies. With this perspective, a number of consultations have been conducted in the ASEAN region over the last couple of years by FAO/APFIC, SEAFDEC, MRC and others on the perspective of habitat and fisheries resources conservation and management. There is a general consensus that there is a need to integrate fisheries and habitat management. Through SEAFDEC two major, sub-regional, events have taken place: the Second Gulf of Thailand Meeting held in Bangkok, 24 – 26 February 2009 and 1st Meeting of the Andaman Sea sub-region held in Phuket in October 2009, in cooperation with the BOBLME.

During the second Gulf of Thailand recommendations, in the context of integration of fisheries and habitat managements, were made to further improve information sharing, explore ways and means to manage and conserve shared and migratory stocks (such as indo-pacific mackerel and related species) and in the process assess the abundance, migratory patterns, spawning areas with an aim to establish larger fisheries resources conservation areas (*refugia*).

At the 1st Meeting of the Andaman Sea sub-region held in Phuket in October 2009, SEAFDEC-Sida project reviewed the management schemes by providing an initial inventory of existing

management schemes established within the ASEAN Andaman Sea countries. Criteria were proposed, and acknowledged, for the establishment of larger fisheries resources conservation areas (*refugia*) that would form elements of larger ecosystem management areas. These areas could include trans-boundary arrangements and would build upon a sequence of smaller management areas (MPAs, heritage sites, etc). Focal points among participating Andaman Sea countries would be identified to provide information management areas and other information for the project to further develop the inventory. The Meeting was organized by SEAFDEC in cooperation with BOBLME and it was a general consensus that this cooperation should be maintained and expanded where suitable.

In addition, information were provided on important species like *Rastrelliger* spp. and Hilsa (and related species recognizing the multi-species nature of fisheries) to the Andaman sea Meeting. The information was used as a basis to explore ways to improve trans-boundary cooperation on schemes to manage migratory the resources of common importance. It was generally agreed that this work should be followed with more information on the species (and related species), their migration, spawning, etc as well as during sessions of on-site training at more specific locations. Mentioned target trans-boundary areas of importance included: boundary areas between Indonesia, Malaysia and Thailand (*Rastrelliger* spp and related species) – SEAFDEC-Sida project in cooperation with BOBLME; Thailand and Myanmar (*Rastrelliger* spp and related species) - SEAFDEC-Sida project in cooperation with BOBLME; Myanmar, Bangladesh and India (Hilsa and related species) – BOBLME and as practical in cooperation with SEAFDEC-Sida. A fourth important trans-boundary area is between Indonesia (Banda Aceh) and India (Andaman and Nicobar Islands) - BOBLME and as practical in cooperation with SEAFDEC-Sida.

3.2 Monitoring, Record and Control- large scale and small scale (coastal) fishing

Top priorities of regional concern included the need to address fishing capacity, regional aspects of fishing vessel registration, the establishment MCS networks, efforts to improve port monitoring and to combat IUU fisheries. Through a number of meetings organized by SEAFDEC and other initiatives (FAO/APFIC, RPOA, etc), there has been a continuously ongoing dialogue among countries in the ASEAN region.

During 2009, there has been three events organized by the SEAFDEC-Sida project that have been, among other things, addressing aspects related to “monitoring, record and control” of fishing capacity: 1) the second Gulf of Thailand sub-regional Meeting, 24 – 26 February 2009, in Bangkok; 2) RTC/expert meeting on Vessel Record and Inventory, 28 – 30 July 2009, in Satun, Thailand and 3) the first Andaman Sea Sub-regional Meeting, 20 – 22 October 2009, in Phuket, Thailand.

During the second Gulf of Thailand agreements, in the context of monitoring, record and control, were made on steps forward with respect to the promotion of a MCS-network and to develop an institutional matrix, to try to advance the process of a vessel record and inventory, port monitoring as well as the geographical coverage of the Gulf of Thailand for the purpose of the focus of the group. Furthermore, the meeting agreed upon a definition of IUU fisheries applicable to the Gulf of Thailand Group. At the RTC/Expert meeting in July 2009 ASEAN-SEAFDEC Member Countries and Papua-New Guinea discussed and provided recommendations on the legal and institutional responsibilities in the processes of registration and licensing with examples on institutional flow charts from Malaysia, Philippines and Japan. The relevance of draft forms to initiate a vessel record and inventory was in principle agreed upon and it was emphasized that it was important to build up regional cooperation for information sharing. The meeting also saw the importance to coordinate with the FAO initiative to establish a “Global Record”.

At the Andaman sea sub-region Meeting in October 2009 reference was provided to the sub-regional cooperation initiated in the Gulf of Thailand and there was a general consensus that sub-regional cooperation would also benefit the Andaman Sea region. The Meeting reviewed and

discussed the institutional matrix on Monitoring, Control and Surveillance and the relevance to support the building up of and MCS network for the Andaman Sea Sub-region was confirmed and the matrix will be further developed to guide the establishment of the MCS-network in the Andaman region.

On the development of a regional “Vessel record and inventory” the survey forms worked out by the project was provided to Meeting. The importance to move ahead and develop a vessel record and inventory was emphasised but the main concrete suggestion on how to move forwards was to use the forms and insert available information in connection with on-site training to be held at provincial level among Andaman Sea countries. Information of Port monitoring is important and of increasing priority in the perspective of port state measures and EU requirements on catch documentation. SEAFDEC-Sida project also provided surveys forms to assess types of information that would be available at ports and landing sites. To explore (and insert) available information it was also suggested that these forms could be used in connection with on-site training to be held at provincial level among Andaman Sea countries.

3.3 Local knowledge, cross cutting issues and safety at sea

Through the participation of the Workshop on Customary Institutions in Indonesia: Do They Have Role in Fisheries Resources and Coastal Management? Conducted by International Collective in Support of Fishworkers (ICSF) in collaboration with *Departmen Kelautan dan Perikanan* (MMAF) Indonesia in Lombok, West Nusa Tenggara, Indonesia from 2-5 August 2009, and as experienced from the field visit during the July 2009 Meeting on Vessel Record and Inventory to La Ngu District in Satun Province Thailand the project could provide good examples to the participants to the 1st Meeting of the Andaman Sea sub-region, October 2009, on the local management systems and local organizations. In both of the examples, the involvement and partnership of all stakeholders in the fishery management process are key to the success of the systems.

Recommendations made at the 1st Meeting of the Andaman Sea sub-region, suggested that capacity building at local level should address aspects integration of fisheries and habitat management, MCS and MCS networks, vessel records, port monitoring, local/traditional knowledge, climate change. Furthermore, on-site training and capacity building should also include provincial and central officers from relevant departments.

3.4 Policy dialogue and promotion of regional cooperation on fisheries management

Results from events like those organized by the SEAFDEC-Sida Project during 2009 1) the second Gulf of Thailand sub-regional Meeting, 24 – 26 February 2009, in Bangkok; 2) RTC/expert meeting on Vessel Record and Inventory, 28 – 30 July 2009, in Satun, Thailand and 3) the first Andaman Sea Sub-regional Meeting, 20 – 22 October 2009, in Phuket, Thailand 4) ASEAN Fisheries Consultative Forum (AFCF), Prep-meeting 26 - 27 May 2009, in Bangkok have all contributed to the policy dialogue at regional and sub-regional level. Based on the results and recommendations SEAFDEC has been in the position to provide inputs and actively participate in international events organized by other organizations such as FAO/APFIC, MRC and BOBLME. It is important to highlight the cooperation established with other key partners like BOBLME project, Mangroves for the Future (MFF). This will increase the strength of the project to look into elements of ecosystem based approaches and to integrate fisheries and habitat management. It will also enhance the promotion of cooperation and coordination in and around the Andaman Sea Sub-region. International events were SEAFDEC-Sida staff and RFPN has participated include:

- MRC Regional Forum on Climate Change, Bangkok, Thailand, 2 – 3 February 2009;
- RTC on International Issues, including Climate Change, Bangkok, Thailand, 10 – 12 February 2009;

- The Workshop on Practical Implementation of ecosystem approach to fisheries and aquaculture, Sri Lanka, 18-22 May 2009;
- MRC Annual Meeting of the Fisheries Program, Siem Reap, Cambodia, 10 – 12 June 2009;
- WWF Climate Change Brainstorming, Bangkok, Thailand, 22 July 2009;
- The Workshop on Customary Institutions in Indonesia: Do They Have Role in Fisheries Resources and Coastal Management? Conducted by International Collective in Support of Fishworkers (ICSF) in collaboration with *Departmen Kelautan dan Perikanan* (MMAF) Indonesia in Lombok, West Nusa Tenggara, Indonesia from 2-5 August 2009;
- Regional Advisory Committee Meeting, Bangkok, Thailand, 1 – 4 September 2009;
- FAO – SEAFDEC Consultation of Fish Stock Assessments, Bangkok, Thailand;
- The Workshop on Best Practices for Supporting and Improving Livelihoods, Manila, 13-15 October 2009;
- Second Coordinating Committee for the RPOA, first week November 2009;
- Results from the second Gulf of Thailand and Vessel Record and Inventory to be reported to the RPOA; and
- BOBLME Inception Meeting, Bangkok, Thailand, 3 – 5 November 2009.

Of special importance to the ASEAN policy dialogue and promotion of regional cooperation was the organization, together with Department of Fisheries, Thailand, of the Preparatory Meeting for the ASEAN Fisheries Consultative Forum (AFCF) held in May 2009. SEAFDEC in collaboration with Department of Fisheries, Thailand organized the Preparatory Meeting of ASEAN Fisheries Consultative Forum (AFCF) to gather views and contributions from the Member Countries as well as the fisheries-related international/regional organizations, which would form an important basis for the determination of issues and activities to be taken up by the ACFF in the future. The Meeting agreed on a work plan for the ACFF that was presented to and adopted by the ASWGFi meeting in Hoi An 3 – 5 June 2009.

4 PROPOSED ACTIVITIES FOR YEAR 2010

Activities for 2010 will be specified based on the results from 2009 with reference to list indicated in the project proposal sent to Sweden. In specifying activities and targets reference will be to the activity plans and priority indication of ASEAN, ACFF, BOBLME, APFIC/FAO, the RPOA, and Mangroves for the Future, Wetlands Alliance and SENSEA. For complete reference the whole list indicated in the project proposal to Sweden together with agreed “output groups” is provided below (see also in *Appendix 1*):

Activities under output group number 1: Integration of habitat and fisheries management

- 1.1 Follow up on in the Andaman Sea on the regionally determined criteria to determine the national, regional and trans-boundary significance of specific areas (for spawning, etc and protection against natural hazards);
- 1.2 Identify, or reconfirm, with Andaman Sea countries on areas/provincial focus and using the regional criteria make a pre-selection of suitable management areas. (areas indicated in 2006 included Banda Ache, North Sumatra Langkawi, Satun/Trang, Ranong and areas in Myanmar bordering Thailand);
- 1.3 Based on the “pre-selected” areas (2.2) monitor (continuously) relevance of spatial boundaries for the process to establish fisheries resources conservation areas (*refugia*) in bordering provinces of Indonesia, Malaysia, Thailand and Myanmar in consultation with the FAO (BOB-LME), the Mangroves for the Future and others;
- 1.4 Review and identify fisheries and habitat management systems in identified provinces in Indonesia, Malaysia, Thailand and Myanmar and gradually widen to cover the whole Andaman Sea area (as input to regional and on-site events). By year two have a map produced on “management areas” in the Andaman Sea;

- 1.5 Regularly, update surveys on data sources, and resource persons, available on important nursery grounds, spawning areas and coastal habitats with a focus on the Andaman Sea and a agreements to be reached on the use and link to key databases. Extract from time to time information on key areas – such as, for year two, priority areas in need for restoration in the Andaman Sea;
- 1.6 Year two and three, based on inputs from national resource persons, provide available information for capacity building on fish stocks conservation and sustainable fisheries practices (including efforts to mitigate future natural disasters) among province and district officers and small and artisanal fishing communities in at least four provinces of the Andaman Sea);
- 1.7 Year two and three, based on inputs from national resource persons, provide capacity building on the importance to maintain coastal features (mangroves, sandy beaches, coral reefs, etc) to province and district fisheries and environmental offices in Indonesia, Malaysia and Thailand, possibly including Myanmar;
- 1.8 Explore (with a view on climate change) the need to restore selected features (mangroves, etc) in at least four provinces around the Andaman Sea and follow up with some restoration measures (year two to three);
- 1.9 With national partners, explore options to monitor selected species (crabs, mackerel, or other) and selected fishing practices in at least three province with a view to monitor improvements, promote responsible fishing and review adaptive capacity (link to eco-labelling);
- 1.10 Initiate, in conjunction with relevant regional and national projects, the development of management regimes based on the integration of fisheries management into habitat management (*refugia*) in selected (border) areas of Indonesia, Malaysia, Thailand and Myanmar The regimes to be gradually developed throughout the project period;
- 1.11 Initiate by year two, in cooperation with regional organisations and national partners, a process to develop sub-regional and national action plans to develop a system of fisheries resources conservation areas (*refugia*) throughout the region for maintenance of regionally important fish stocks. As feasible link the initiative to similar processes elsewhere in the ASEAN region;
- 1.12 By year three develop, with regional partners and national institutions, priorities for fisheries management and management of areas of importance as nursery and spawning grounds (and for protection against natural disasters), for the Andaman Sea (links to similar work elsewhere in Southeast Asia);
- 1.13 By year three, develop, with regional partners and national institutions, priorities, for the restoration and maintenance of geographical features in coastal areas (mangroves, sandy beaches, coral reefs, etc) for the Andaman Sea of importance to mitigate impacts of climate change (links to similar work elsewhere in Southeast Asia);
- 1.14 By year two, initiate work with regional and national partners, on simple assessments on how levels of productivity in coastal areas and *refugia* might/will change over time due to changes in geographical and hydrological features in coastal areas (implying need to adjust allowed fishing effort) due to environmental degradation and climate change;
- 1.15 Review fisheries and habitat management aspects in trans-boundary and sub-regional arrangements and agreements around the Andaman Sea (link to 2.10 below)

Activities under output group number 2: Monitoring, Record and Control – large scale and small scale (coastal) fishing

- 2.1 Initiate, and follow up as recommended a, consultative process among ASEAN countries around the Andaman Sea to identify various options to alleviate problems caused by excessive fishing capacity, to prepare for adaptive measures and to provide the basis for cooperation on management;

- 2.2 Provide background information, as needed from time to time, on large-scale and small-scale fisheries to provide understanding on key elements of the sector as background to improve systems to monitor, record and control the fisheries (size, structure, people involved, etc);
- 2.3 Review surveys of level and type of fishing capacity in small-scale/coastal fisheries in at least six locations, in Indonesia, Malaysia, Thailand and possibly Myanmar including incidences of illegal (IUU) fisheries by large-scale vessels in coastal waters, with priority on those selected for *refugia* Ready by early year two;
- 2.4 In the process of reviewing the status of small-scale/coastal fisheries include staff capacity building at provincial/district level in Indonesia, Malaysia and Thailand (in provinces selected for *refugia*, see section 1) by mid-year two on the ability to monitor, record and control active fishing capacity in small scale/coastal fisheries, with a view to prepare for adaptive measures. Link with the RPOA-IUU and FAO (BOB-LME);
- 2.5 Review available information on destructive fishing and aquaculture practices in the Andaman Sea and selected areas;
- 2.6 Organize capacity building/learning in at least Indonesia, Malaysia and Thailand for central and province (jointly) level on **how to report on** the profile structure and operations of the fisheries, large and small-scale, for the Andaman Sea;
- 2.7 Initiate a process to establish a **MCS network** in the Andaman Sea similar to the initiative around the Gulf of Thailand by fourth quarter year;
- 2.8 Initiate, with Member Countries, review, description and recommended on practicalities and revisions on **MCS practices** for large-scale and small-scale fisheries, respectively and initially for the Andaman Sea (year one and two and as recommended for subsequent year(s);
- 2.9 Initiate a process for the **drafting of plans to monitor, record and control** active fishing capacity in small scale/coastal fisheries, including incidences of illegal (IUU) fisheries, destructive fisheries and unreported landings by large-scale vessels in coastal waters, in at least Indonesia, Malaysia and Thailand, possibly including Myanmar as an input to the management of fishing capacity. Draft should be available by the end of year two. In the process link with the process in the Gulf of Thailand and FAO (BOB-LME);
- 2.10 Review (year one and continuously as new information arrives) existing or planned **trans-boundary and sub-regional agreements** and arrangements around the Andaman Sea in terms of the usefulness as a framework trans-boundary monitoring, control of fishing activities and identification of mitigation and adaptation needs, Follow up with ASEAN and FAO (BOB-LME) in the process;
- 2.11 By end of year three, prepare specific **action plans** on the development of systems to monitor, record and control active coastal fishing capacity in support of the need to address over-fishing, destructive fishing and to prepare for measures of adaptation in small-scale coastal fisheries around the Andaman Sea (Link to the work in the Gulf of Thailand). Coordinate with the ASEAN, FAO (BOB-LME) and RPOA-IUU;
- 2.12 Continue the process to **promote**, in dialogue with national and regional partners (ASEAN,FAO/APFIC and RPOA-IUU), further improvements, preparations and **implementation** of activity plans to manage fishing capacity, to reduce IUU fishing in near coastal waters and to build up response to climate change in terms of adjustments as needed in the fishing capacity;
- 2.13 Initiate a process, with regional and national partners, to develop systems for simple assessments on how levels of optimum fishing capacity might/will change over time due to changes in geographical and hydrological features and other impacts of climate change in coastal (and inland) areas (year two and three);
- 2.14 Organize and follow up as recommended on the SEAFDEC workshop on **fishing vessel registration** (June/July 2009) in order to support processes to build up, or improve registration of fishing vessels starting with a “record and inventory”, both large and small scale;

- 2.15 Initiate process to improve or **establish systems for record and inventory of boats** in Indonesia, Malaysia and Thailand, possibly including Myanmar (coordinate with the process in the Gulf of Thailand) by early year two;
- 2.16 Provide awareness on the need to develop **alternative or supplementary livelihoods** (that could be the ultimate necessity in response to impacts of climate change), including possible alternatives, to facilitate exit from fishing for national, provincial and district authorities;
- 2.17 Organize a **Regional Technical Consultation**, or expert meeting, by year two, on alternative livelihoods and the role of fisheries agencies in providing exit into new occupations;
- 2.18 Inform the ASEAN-SEAFDEC Member Countries and provide **inputs to the ASEAN policy making mechanism** on the status, profile and practices of large-scale industrial as well as small-scale fisheries together with recommendations on the need to improve monitoring, record and control measures

Activities under output group number 3: Local knowledge, cross-cutting issues and safety at sea

- 3.1 Survey available information on local knowledge and actions among ethnic groups and coastal communities in terms of management and responses to natural hazards in Indonesia, Malaysia, Thailand and Myanmar;
- 3.2 Review documentation on local practices and local traditions in systems to record and register fishing boats and fishing gear (see also 2.14 and 2.15) from the ASEAN region;
- 3.3 Follow-up on the study by the CBNRM-LI on the role of women in fishing communities in Cambodia by doing one similar study for two areas on the Andaman Sea coast, year two;
- 3.4 Follow-up on the ICSF symposium in Siem Reap, 2007, on the rights of fisher-folk to fish and to remain at the locations of their villages;
- 3.5 Review available reports on the effectiveness of response efforts to reach out to poorer groups of people;
- 3.6 Indicate areas of importance to be included in training programmes on safety-at-sea and rescue at sea of relevance to the mitigation of effects caused by marine natural hazards and expected effects of climate change;
- 3.7 Support a process to work out simple early warning systems and response packages by facilitating input of local knowledge and practices (year two and three);
- 3.8 Provide result and information to ASEAN-SEAFDEC Member Countries from SEAFDEC activities as well as on experiences gained from other source;
- 3.9 Other cross-cutting issues that might be raised in the process of implementation of activities

Activities under output group number 4: Policy dialogue and promotion of regional cooperation on fisheries management

- 4.1 Regional Consultations (at least one per year) and sub-regional, Andaman Sea, (at least one per year) on common ASEAN- SEAFDEC approaches and issues to mitigate problems within the fishing sector and climate change and adaptation measure, including working group to develop fisheries management mechanism. As suitable for promotion of regional cooperation and reference follow up with consultations in other sub-regions;
- 4.2 Preparatory consultation to draft work and activity plan for the ASEAN Fisheries Consultative Forum (May 2009);
- 4.3 Recommendations on results from project activities (SEAFDEC and non-SEAFDEC projects) to ASEAN-SEAFDEC Member Countries and to policy making mechanisms;
- 4.4 Monitor national legislation and institutional arrangements pertaining to fisheries management, habitat management, management of fishing capacity, to combat illegal fishing and climate change and adaptation – organize dialogue between Member Countries as suitable in conjunction with other event (one/year);



- 4.5 Review international conventions and other agreements of relevance to the management of fisheries, fishing capacity and habitats and climate change with a view to how they are implemented in the ASEAN Region;
- 4.6 Organize Regional Technical Consultations (RTC) and/or Expert Meetings (at least one per year) with ASEAN-SEAFDEC Member Countries on the implications of international conventions and agreements of relevance to fisheries management and habitat management and their implementation in Member Countries;
- 4.7 Tour to Scandinavia for reference from the Baltic and the North Sea of relevance to the development of regional fisheries management organizations and regional responses to climate change (year two or three – if funds allow);
- 4.8 To participate in and/or organize other regional events, if possible with ASEAN, FAO, UNEP, RPOA-IUU, MRC, BOB-LME, Mangroves for the Future, Wetlands Alliance, etc, if called upon to promote regional cooperation, responses to climate change, policy dialogue and coordination (at least four/year)

Activities under output group number 5: Project management and coordination

- 5.1 Project Management, implementation and administration;
- 5.2 Set up project organizational structure;
- 5.3 Recruit staff and resource persons (longer term or temporary as needed from time to time);
- 5.4 Planning meetings with FAO/RAP, ASEAN Sec and when in operation the BOB-LME on the SEAFDEC-Sida Project implementation;
- 5.5 Planning meetings with the Andaman Sea countries (at least one per year – in conjunction with “regular” Andaman Sea events. First one to include inception);
- 5.6 Maintain regular meetings with the RPOA-IUU, Mangroves for the Future, Wetlands Alliance, COBSEA and their focal points in ASEAN and Andaman Sea countries;
- 5.7 Organize/take part in regular meetings with FAO/RAP, WorldFish Centre, NACA, MRC and other relevant bodies to maintain coordination;
- 5.8 Periodically assess the progress and report to SEAFDEC Council, ASEAN and Member Countries;
- 5.9 Reports to Sweden as required
- 5.10 Annual Review meeting (Sida and/or SBF)

SEAFDEC-Sida cooperation in follow up to Climate Change and Adaptation 2009 onwards

	M 1	M2	M 3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12
Schedule for activities to sub-component/Output 1: Integration of habitat and fisheries management												
1.1. Follow up on the relevance for the Andaman Sea on the regionally defined criteria to determine the national, sub-regional and trans-boundary significance of specific areas												
1.2. Identify, or reconfirm, with Andaman Sea countries on areas/provincial focus and using the regional criteria make a pre-selection of suitable management areas.												
1.3 Based on the “pre-selected” areas (2.2) monitor (continuously) relevance of spatial boundaries for the process to establish fisheries resources conservation areas (<i>refugia</i>) in bordering provinces (consult FAO (BOB-LME), the Mangroves for the Future, etc)												
1.4. Review available information and identify fisheries and habitat management systems in the identified provinces												
1.5 Regularly, update surveys on data sources, and resource persons, available on important nursery grounds, spawning areas and coastal habitats with a focus on the Andaman Sea												
1.6. Year two and three, based on inputs from national resource persons, provide available information for capacity building on fish stocks conservation and sustainable fisheries practices (including efforts to mitigate future natural disasters) among province and district officers and small fishing communities	Y2											
1.7 Year two/ three, based on inputs from national resource persons, capacity building on the importance to maintain coastal features (mangroves, sandy beaches, coral reefs, etc) to province and district fisheries and environmental offices	Y2											

1.8 Explore (with a view on climate change) the need to restore selected features (mangroves, etc) in at least four provinces around the Andaman Sea and follow up with some restoration measures (year two to three)	Y2												
1.9 With national partners, explore options to monitor selected species (crabs, mackerel, or other) and selected fishing practices in at least three province with a view to monitor improvements, promote responsible fishing and review adaptive capacity (link to eco-labelling)													
1.10 Initiate, in conjunction with relevant regional and national projects, the development of management regimes based on the integration of fisheries management into habitat management (<i>refugia</i>) in selected (border) areas of Indonesia, Malaysia, Thailand and Myanmar The regimes to be gradually developed throughout the project period													
1.11 Initiate by year two, in cooperation with regional organisations and national partners, a process to develop sub-regional and national action plans to develop a system of fisheries resources conservation areas (<i>refugia</i>) throughout the region for maintenance of regionally important fish stocks. As feasible link the initiative to similar processes elsewhere in the ASEAN region	Y2												
1.12 By year three develop, with regional partners and national institutions, priorities for fisheries management and management of areas of importance as nursery and spawning grounds (and for protection against natural disasters), for the Andaman Sea (links to similar work elsewhere in Southeast Asia)	Y3												
1.13 By year three, develop, with regional partners and national institutions, priorities, for the restoration and maintenance of geographical features in coastal areas (mangroves, sandy beaches, coral reefs, etc) for the Andaman Sea of importance to mitigate impacts of climate change (links to similar work elsewhere in Southeast Asia)	Y3												

1.14 By year two, initiate work with regional and national partners, on simple assessments on how levels of productivity in coastal areas and <i>refugia</i> might/will change over time due to changes in geographical and hydrological features in coastal areas (implying need to adjust allowed fishing effort) due to environmental degradation and climate change	Y2												
1.15 Review fisheries and habitat management aspects in trans-boundary and sub-regional arrangements and agreements around the Andaman Sea (link to 2.10 below)													

	M 1	M2	M 3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12
Schedule for activities to sub-component/output 2: Monitor, record and control												
2.1. Initiate, and follow up as recommended, a consultative process among ASEAN countries around the Andaman Sea to identify various options to alleviate problems caused by excessive fishing capacity, to prepare for adaptive measures												
2.2. Provide background information, as needed from time to time, on large-scale and small-scale fisheries												
2.3. Review surveys of level and type of fishing capacity in small-scale/coastal fisheries Ready by early year two.												
2.4. In the process of reviewing the status of small-scale/coastal fisheries include staff capacity building at provincial/district level in Indonesia, Malaysia and Thailand Link with the RPOA-IUU and FAO (BOB-LME)												
2.5. Review available information on destructive fishing and aquaculture practices in the Andaman Sea and selected areas												
2.6. Organise capacity building/learning in at least Indonesia, Malaysia and Thailand for central and province (jointly) level on how to report on the profile structure and operations of the fisheries, large and small-scale, for the Andaman Sea												

2.7. Initiate a process to establish a MCS network in the Andaman Sea similar to the initiative around the Gulf of Thailand by fourth quarter year one													
2.8. Initiate, with Member Countries, review, description and recommended on practicalities and revisions on MCS practices													
2.9 Initiate a process for the drafting of plans to monitor, record and control active fishing capacity in small scale/coastal fisheries, including incidences of illegal (IUU) fisheries,													
2.10 Review (year one and continuously as new information arrives) existing or planned trans-boundary and sub-regional agreements and arrangements around the Andaman Sea Follow up with ASEAN and FAO (BOB-LME) in the process, link to 1.15													
2.11 By end of year three, prepare specific action plans on the development of systems to monitor, record and control active coastal fishing capacity	Y3												
2.12 Promote, in dialogue with national and regional partners (ASEAN, FAO/APFIC and RPOA-IUU), further improvements, preparations and implementation of activity plans to manage fishing capacity													
2.13 Initiate a process, with regional and national partners, to develop systems for simple assessments on how levels of optimum fishing capacity might/will change over time (year two and three)	Y2												
2.14 Organise and follow up as recommended on the SEAFDEC workshop on fishing vessel registration (June/July 2009)													
2.15 Initiate process to improve or establish systems for record and inventory of boats in Indonesia, Malaysia and Thailand, possibly including Myanmar (coordinate with the process in the Gulf of Thailand) by early year two	Y2												
2.16 Provide awareness on the need to develop alternative or supplementary livelihoods including possible alternatives													
2.17 Organise a Regional Technical Consultation, or expert meeting, by year two, on alternative livelihoods and the role of fisheries agencies in providing exit into new occupations	Y2												

2.18 Inform the ASEAN-SEAFDEC Member Countries and provide inputs to the ASEAN policy making mechanism													
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	M 1	M2	M 3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12
Schedule for activities to sub-component/output 3: Local knowledge, cross-cutting issues and safety at sea												
3.1. Survey available information on local knowledge and actions among ethnic groups and coastal communities in relation to adaptive capacity and natural hazards												
3.2. Review documentation on local practices and local traditions is systems to record and register fishing boats												
3.3. Follow up on the study by the CBNRM-LI on the role of women in fishing community with a similar study for the Andaman Sea (year 1 prepare)												
3.4. Follow up on the ICSF Symposium in Siem Reap 2007 on the rights of fisher-folk												
3.5. Review available reports on the effectiveness of response efforts to reach out to poorer groups of people												
3.6. Indicate areas of importance to be included in training programme for safety-at-sea and rescue at sea of relevance to the mitigation of effects caused by marine natural hazards and expected effects of climate change												
3.7 Support the process to work out simple early warning system and response packages with input of local knowledge and practices												
3.8. Provide results and information to ASEAN-SEAFDEC Member Countries												
3.9 Other cross-cutting issues that might be raised during implementation												

	M 1	M2	M 3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12
Schedule for activities to sub-components/Output 4: Policy dialogue and promotion of regional cooperation of fisheries management												
4.1. Regional Consultation and sub-regional consultations in promotion of regional and sub-regional cooperation and agreements												
4.2. Preparatory consultation to draft work and activity plan for ASEAN Fisheries Consultative Forum												
4.3 Information and advice to ASEAN and ASEAN-SEAFDEC Member Countries and to policy mechanisms												
4.4. National legislation and institutional arrangements pertaining to management of the exploitation of fisheries and critical habitats												
4.5. Review international fisheries conventions and other conventions with a view to how they are implemented in the four affected ASEAN Countries												
4.6. Regional Technical Consultation with all ASEAN-SEAFDEC Member Countries on recommendations for climate change and adaptation and protection against future natural disasters	Y3											
4.7 Tour to Scandinavia in follow up on regional cooperation (if funding available)	Y3											
4.8. Other regional FAO-ASEAN-SEAFDEC, etc events organised if called upon to promote policy dialogue and coordination												

	M 1	M2	M 3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12
Schedule for activities to sub-component/Output 5: Project Management and coordination												
5.1 Project management, implementation and administration, including set up of organisation and recruitments												
5.2 Planning with FAO/RAP, SEAFDEC, etc												
5.3 Planning meetings with the Andaman Sea countries												
5.4 Maintain regular meetings with FAO/APFIC, the ASEAN and their focal points for fisheries												
5.5 Organise take part in regular meetings with FAO/RAP, RPOA, WorldFish Centre, Wetlands Alliance, COBSEA, and other relevant bodies to maintain coordination												
5.6 Assess progress and report to SEAFDEC Council, ASEAN and Member Countries												
5.7 Reports to Sweden as required												
5.8 Annual Review meeting (Sida and/or SBF)												
5.9 Finalise proposal 2012 onwards	Y2											

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region
Lead Country:	Thailand
Lead Department:	SEAFDEC Secretariat
Total Duration:	2007-2009

1. INTRODUCTION

One of the serious problems in achieving sustainable fisheries, especially for small-scale fisheries in ASEAN region is over-capacity of the sector; too many fishers competing each other over dwindling fisheries resources. Due to various difficulties on the establishment of appropriate fisheries management system in coastal areas in the ASEAN region, fisheries have been conducted under the open access regime (race to fish) in unregulated manner. The reducing trend of daily catch would worsen their livelihood, and lead to chronic status of poverty in the small-scale fisheries households. It is found that there are not many options to alleviate this status, especially in relation to the lack of alternate income earning opportunities other than fisheries in the rural fishing community. People might continue to be small scale fishers and tend to use illegal and destructive fishing gears and practices to desperately maintain their livelihood. Such vicious cycle would further aggravate their social, economic and financial status of small-scale fishers and ecological status of aquatic/fisheries resource base.

On the other hand, the obtaining maximum benefits out of fish and fisheries products in the fishing community to improve the fisheries livelihood has not effectively been achieved due to social and other problems. Traditional marketing system, in most cases, dominated by so-called “middlemen” purchasing fisher’s catch in the form of fresh fish in fishing communities for their various disposition purposes of fisheries products through their marketing channels. Fishers do not normally obtain the greater benefit out of their catch, if these are sold simply as fresh fish, especially in peak season. Furthermore, in most cases, they are not in the position to initiate small business using their catch to produce value-added products, considering their limited technical and financial capacity. In addition, even though the person who managed to produce fisheries value-added products, general competitive marketing situation of fisheries product developed in other areas or even by the large fisheries industries would provide negative factor to promote feasible economic activities in the rural areas.

Although it is understood that women actively participated in fisheries even in the fishing activities, their level of involvement is always kept as informal basis and hardly recognized as important and potential stakeholders in rural economic activities. In this connection, the women’s group can be considered as underutilized valuable human resources in the community. Although the project is not specifically planned only for the women’s participation, but gender sensitive approach to the community members both men and women for the proposed activities will be taken, involvement of women’s group can be motivated and encouraged because these groups are not fully mobilized in various community activities.

In 1979, Mr. Morihiko Hiramatsu, the Governor of Ooita Prefecture, Japan at the time proposed “One Village, One Products (OVOP)” movement to provide greater motivation for the rural potential people being community leaders to activate rural economy mobilizing various inputs unique and available in these rural communities.

Over 25 years, such movements have been successfully developed in either in Ooita and other Prefectures, Japan, recognized as production of differentiated products, “One Village, One Products (OVOP)’ and greatly mobilized rural people including women’s group for the promotion of various vitalization activities of rural communities. It is also proved that women’s groups have taken various leading roles especially from social aspect of the activities. With respect to the productions of handicrafts and food materials through OVOP movement, the women’s groups have normally taken substantial role in the community.

Through the comprehensive Human Resource Development activities, the movements have reviewed specificity of the local community, not in the negative but positive aspects and identified the potential products and activities that can economically, financially and socially activate the respective rural communities. Such principles, especially in its bottom-up approach have been supported by numbers of developing countries as a mean to develop and activate rural communities’ status, motivating the people and mobilizing the unique but locally available technical skills and materials.

These countries in ASEAN region promoted “One Village, One Products (OVOP)”concept as well as movements were Cambodia (One Village, One Product), Indonesia (Back to Village), Lao PDR (Neuang Muang, Neuang Phalittaphan), Malaysia (Satu Kampung, Satu Produk), Philippines (One Barangay, One Product), Thailand (One Tambon, One Product (OTOP).

Especially, Thailand has developed “One Tambon, One Product (OTOP)” in its effective own way. The OTOP with specific objectives both on the effect to rural development and promotion of internationally tradable products has been successfully integrated and developed in shorter period and achieved special nation-wide supporting system coordinated and supported by the special unit established in Prime-Minister Office.

It might be difficult to promote international trade of fisheries products to be produced in rural fishing communities in their backyard. As safety of the food is a keen concern in the international society, application of stringent and high level trade regulations under WTO such as SPS (Sanitary and Phytosanitary Measures) and recommended measures including HACCP (Hazard Analysis Critical Control Points) will greatly handicapped for the successful promotion of these product in the international market. It is also too ambitious to quickly develop the system to meet the international requirements on sanitary and other related issues (*i.e.* packaging) considering the current technical and financial capacities and status of the women’s group who would produce appropriate fisheries product in rural fishing communities. In this connection, outputs of the movement will be targeted to promote value-added but differentiated fisheries products and activities in local/ national markets (Aiming only one product rather than number one products). OVOP movement can therefore be more referable and usable than regional success case of OTOP, for the proposed project activities such as motivating the people’s function and mobilizing women’s group through appropriate HRD activities and development/ market policy of the project.

Above problem together with perishable nature of material (harvest from aquatic ecosystem) always provide negative factor to develop value-added product in the fishing communities. In addition, public support (government) tends to focus on the production/management side of small scale fisheries, not on the marketing side, due to the reason that this sector can be solely handled by industry themselves, although it was understood that marketing people involved in the small scale are not always kept good cooperation with fishers (middlemen).

It is understood that the promotion and marketing of value-added fisheries products requires cultural background. As normally, food habit is rather historically developed and conservative nature, special marketing strategy is required. ASEAN region, composed of 10 countries has developed their culture on fish eating habit in diversified manner in term of acceptance of various types of fisheries products. This has led to the regional directions to promote intra-regional trade

as part of the ASEAN Economic Integration Policy and Roadmap for Fisheries Integration. Based on this recognition, regional promotional work of “One Village, One Fisheries Product (FOVOP)” would be accepted. In addition to such cultural background, the most of ASEAN Member Countries has tested “OVOP” movement with different level of success.

2. PROGRAM

2.1 Objectives

Development Objectives

The development objective is to improve fisheries livelihood through motivation of the potential people in the fishing communities in ASEAN Member Countries through introduction and promotion of “One Village, One Fisheries Product (FOVOP)”.

Project Objectives

In order to achieve the above Development Objectives, the project will focus on the following detailed objectives through various HRD activities.

- 1) To enhance the awareness on the gender and development in the fishing communities, especially to clarify the role and function of women’s group for the development of small-scale economic activities in the community level;
- 2) To develop the regional strategy on the development and promotion of “One Village, One Fisheries Product (FOVOP)” especially the policy to support these activities through the government services;
- 3) To evaluate the needs and problem areas on the introduction and development of “One Village, One Fisheries Product (FOVOP)” in each ASEAN Member Country;
- 4) To identify the regional mechanism requirement to support the promotional work on “One Village, One Fisheries Product (FOVOP)”;
- 5) To provide basis to facilitate exchange of experiences among ASEAN Countries and experts, including experience from the case studies to develop recommendation for future FOVOP activities that could be later developed, which are suitable for each local situation in respective ASEAN Country.

2.2 Program description

Currently there are no national policy/framework/guidelines to support the promotion of FOVOP in the ASEAN Region. Based on such similarity in their culture on fish eating habit and other social factors, exchange and sharing their experiences among ASEAN 10 countries in terms of motivation of the people, production of value added products and other activities specific to each locality, can be the regional advantages to promote the proposed movement, rather than promoted separately in respective countries. These can be achieved through development of the regional policy/framework and guidelines to support the initiative through development of the regional strategy on the development and promotion of “One Village, One Fisheries Product (FOVOP)”, especially the policy to support these activities through the government services. After the project completion, the Regional Guidelines and related strategies will be used as basis for the ASEAN Countries to apply and further promote and implement activities under their specificity and local situation.

At present, there is no effective mechanism to improve the livelihoods of fisheries household and initiate small-scale business in rural fishing communities in ASEAN region. The issues also inter-linked with fisheries problems as over-capacity and coastal fisheries management issue. Although the livelihood issues and poverty problem in rural fishing communities in most cases entrusted to the fisheries related government agency, their supporting programs are always very oriented toward and confined in very technical nature (*i.e.* using appropriate fishing gear, method to

manage fisheries). Therefore, it might be appropriate to promote “One Village, One Fisheries Product (FOVOP)” by introducing proved methodologies as OVOP/OTOP with appropriate marketing strategy to the ASEAN Region.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
<p>Case Studies on the Promotion of FOVOP in ASEAN Region (Local HRD Workshop)</p> <p>Under the HRD FOVOP project activities, the case studies were conducted through National HRD Workshop on the promotion of FOVOP in participating countries by SEAFDEC in collaboration with Member Countries with includes the government officials at national and local levels and representatives from the women’s group/communities.</p> <ol style="list-style-type: none"> 1. Cambodia: <ul style="list-style-type: none"> - 1st HRD Workshop: 19-20 May 2009 - 2nd HRD Workshop: 19-20 Sept. 2009 2. Indonesia: 15-19 June 2009 3. Lao PDR <ul style="list-style-type: none"> - 1st HRD Workshop: 23-27 March 2009 - 2nd HRD Workshop: 4-8 May 2009 4. Philippines: 24-28 August 2009 5. Myanmar: 3-8 August 2009 6. Vietnam: 30 Nov.-4 Dec. 	Jan.-Oct.	85 % Completed
<p>Development of the Materials for Training and Awareness Building and Revision of HRD Materials</p> <p>The outputs from the Regional HRD Workshop <i>i.e.</i> the Regional Strategy for the Promotion of FOVOP in the ASEAN Region, and Potential FOVOP Products and Services in the ASEAN Region have been translated into the respective national languages for using as FOVOP HRD materials for the government awareness building.</p> <ul style="list-style-type: none"> - The responsible officers of the central government revised the regional HRD materials including strategies and guidelines accommodating the findings through the local HRD Workshop. - Based on the revised HRD materials submitted by the responsible officers of the central government that conducted case studies, the Secretariat will revise the regional HRD materials (including Strategies and Guidelines) so as to reflect the outcomes of the case studies. 	Jan.-Oct.	70 % Completed

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

<p>The 2nd RTC on the Promotion of FOVOP in ASEAN Region</p> <ul style="list-style-type: none"> - The 2nd RTC on the Promotion of FOVOP in ASEAN Region will be organized. Four government officers (two from central government and two from local government) will participate to the 2nd RTC. HRD activities will be conducted using the revised HRD materials accommodating the outcomes of the case studies in the participating countries and localities. Through reviewing the HRD materials and exchanging the experiences of the participants, these HRD materials will be finalized as the regional strategies and guidelines for the promotion of FOVOP movement. - The 2nd RTC will also serve as a forum for sharing experiences among the Member Countries (including experience from both 	Jan./Feb.	On-going
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<p>government and non-government representatives during the case studies) to support future national activities to be implemented later in respective country. In addition, the 2nd RTC will also discuss and recommend future possible post-project activities that would be implemented by respective countries (<i>i.e.</i> once specific products are identified, a technical training on proper production/handling - post-harvest methods/technologies – should be conducted to ensure quality of products).</p> <p>- The 2nd RTC will further discuss the development of regional network to promote FOVOP in ASEAN region, in the long run, after the project implementation. As SEAFDEC develop its technical competence in term of required technologies for the development of FOVOP products including post-harvest technologies, fishing and post harvest technologies, aquaculture technologies and fisheries management and conservation of aquatic environment, it can be acted as core function of the network linking with the respective national networks, if such arrangement is developed by the interested countries on the promotion of FOVOP.</p>		
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4.2 Expected Outcomes

Awareness building on how the Fisheries OVOP (FOVOP) can provide impact on the following issues, will be greatly enhanced through the successful project implementation

- 1) Improvement of fisheries livelihood;
- 2) Impact on the over-capacity;
- 3) Gender and development in the fishing community;
- 4) Active participation of women's group on the community based business activities; and
- 5) Recommendation on identified future FOVOP activities to be implemented in respective ASEAN Country.

Through the proposed HRD activities, the following strategies/policy and guidelines will be clarified and understood among the various stakeholders in the region.

- 1) Regional strategy and guidelines for the promotion of FOVOP in ASEAN Region, especially on HRD motivating local people and encouragement for the appropriate institutional set up including women's group;
- 2) Regional strategy and guidelines for the support of government agencies on the promotion of FOVOP;
- 3) Regional guidelines for the mobilization of the micro-credit and marketing promotion in rural areas; and
- 4) Regional guidelines on the Identification of the FOVOP Products.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Human Resource Development (HRD) on Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region
Lead Country: Thailand
Lead Department: SEAFDEC Secretariat
Total Duration: 2008-2010

1. INTRODUCTION

Despite overall social and economic development in the ASEAN region, the disparity of the social and economic well-being among/within the most of the Member Countries can be the one of the serious constraints to further promote the countries' development. The low social and economic well-being has led a large number of people in the region, especially in rural area, to live in poverty status. As the fisheries is the one of the potential sector for such coastal and inland communities to improve their livelihoods as well as their source of protein food, the HRD project therefore being developed to focusing on these rural poverty is identified as an urgent requirement in the region.

2. PROGRAM

2.1. Objectives:

Development Objectives

To enhance human capacity of fishers of selected rural fishery communities as well as relevant fisheries government officials and those working at the local level in support of fishery communities in order to alleviate the identified poverty status through fisheries intervention covering the areas of co-management, responsible fishing practices, backyard fishery post-harvest and processing, rural aquaculture and inland fisheries development. A special focus will also be given to the rural areas and fishery communities in ASEAN region.

Project Objectives

- 1) Support of requirements on poverty alleviation by fisheries intervention through mobilizing of regional experiences and information exchange in ASEAN region;
- 2) Identification of prioritized HRD programs on thematic areas based on local needs, and partnership support from national and regional level; and
- 3) Implementation of the appropriate HRD activities to mitigate the rural poor by the fisheries intervention.

2.2 Program Description

Main activities under this program are as follows:

- 1) First Regional Technical Consultation on Fisheries Human Resources Development (HRD) for Poverty Alleviation

The consultation will be conducted to 1) develop the regional policy on the role of fisheries for the poverty alleviation reflecting the analysis on the respective national problems; 2) identify the technical issues, which will be critical for the poverty alleviation with envisaging practical problems in the specific areas; 3) clarify the role of small and medium-scale enterprises (SMEs)

with respect to the poverty alleviation of the rural poor, and 4) identify the seven project sites for the implementation of appropriate on-site HRD activities. In order to identify the seven project sites, one policy maker and one technical staff who are responsible for the extension work of the central government as well as the relevant NGOs, academic institutions of the ASEAN Member Countries will be invited to the three days RTC.

2) Human Resources Development (HRD) Activities on Thematic Areas

Based on the outcomes of the RTC above, HRD activities in respective technical areas will be conducted in five different sites mobilizing technical experiences and facilities of SEAFDEC Departments. The five technical areas will be proposed as follows:

- 1) Local/indigenous institution and co-management: *Secretariat and Training Department*
- 2) Responsible fishing technologies: *Training Department*
- 3) Backyard fishery post-harvest technology: *Marine Fisheries Research Department*
- 4) Rural aquaculture: *Aquaculture Department*
- 5) Inland fisheries development: *Marine Fishery Resources Development and Management Department*

A 10-day individual HRD activity will be conducted at respective Departments. The government official, who is responsible for the extension work of ASEAN Member Countries and representative from the fishery community, will be invited for the HRD activities. The envisaged activities will be to further identify the specific requirements of the HRD issues in each respective site in collaborative manner (involvement of SEAFDEC, central and provincial government of the respective sites).

Based on the outcomes of discussion, the staff of the Secretariat in collaboration with ASEAN Member Countries will prepare the appropriate HRD materials to be used in the on-site HRD activities.

3) On-site Human Resources Development (HRD) Activities

HRD Activities at seven specific sites as identified at the 1st RTC will be conducted by mobilizing regional expertise both SEAFDEC side and also from the Member Countries. This will enable the Member Countries to be involved in the implementation of on-site activities. The on-site HRD activities for marine coastal fisheries will be proposed at three sites. The following are the required steps to implement the project activities.

- 1) Identification of specific local indigenous institution for the sites.
 - 2) Identification of the types and manners of HRD activities.
 - 3) Identification of the appropriate numbers of beneficiaries.
 - 4) Collaboration mechanism with the host governments.
 - 5) Finalization of the Terms of Reference of the staff involved both for national and regional technical staff.
 - 6) Coordination mechanism among the five thematic HRD activities.
- 4) Second Regional Technical Consultation on Fisheries Human Resources Development (HRD) for Poverty Alleviation

The Consultation will be organized to evaluate the project activities, identify the follow up activities to be conducted with respect to the poverty alleviation by fisheries intervention. Considering the existing regional policy frameworks and priority actions in fisheries and HRD particularly the “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region” adopted in 2001 and the “Strategy for Human Resource Development in Fisheries in the ASEAN Region”, adopted in 2004, the Consultation is expected to strengthen

these policy directions on fisheries for poverty alleviation. One policy maker and one technical staff who are responsible for the extension work of the central government as well as the relevant NGOs, academic institutions of the ASEAN Member Countries will be invited to the three days RTC. The proceedings of RTC will be used as basis for the project final report.

3. PROGRESS ACTIVITIES IN THE YEAR 2008-2009

Project/Activity Title	Duration	Remarks
1) Training of the Trainers on Rural Aquaculture at AQD, Iloilo, Philippines	10-20 November 2008	completed
2) Training Course on Responsible Fishing Technology at TD, Samutprakarn, Thailand	18-27 November 2008	completed
3) Training of the Trainers on Local/Indigenous Institutions and Co-management at TD, Samutprakarn, Thailand	12-21 January 2009	completed
4) Training of the Trainers on Inland Fisheries Development at MFRDMD, Kuala Terengganu, Malaysia	16-24 February 2009	completed
5) Training of the Trainers on Backyard Fishery Post harvest Technology at MFRD, Singapore	3-11 March 2009	completed
6) HRD on-sites activities	September-December	40% completed

3.1 Training of the Trainers on Rural Aquaculture in AQD

AQD organized the HRD Training of Trainers on Rural Aquaculture from 10-19 November 2008 at SEAFDEC/AQD Tigbauan, Iloilo, Philippines. The 10-day training aims to improve the capacity of fisheries government officials in different localities to enable them to promote appropriate aquaculture technology and coastal resources management to fishers and local folks in selected rural fishery communities of their respective countries so as to provide livelihood and uplift the socio-economic conditions of the fishers and other members of the community. The focal point on rural aquaculture under this project from each beneficiary country will be invited to the training.

3.2 Training Course on Responsible Fishing Technology in TD

The training course on Responsible Fishing Technologies are conducted in English and comprised of lectures, group discussions, workshop practices and on-site visit & demonstration at sea. The course focused on responsible fishing and practices, fabrication of appropriate fishing gears, a small scale insulated fish box to improve the fish quality of the catch, safety at sea and fishing sail boat to reduce the cost of fishing investment by cutting down fuel oil expense as well as to reduce the pollution from oil discharged into the water. The course covered new approaches to responsible fisheries extension, its concept and methodologies as well as appropriate technologies and manners to conducted on-site HRD activities in selected countries.

3.3 Training of the Trainers on Local/Indigenous Institutions and Co-management at TD, Samutprakarn, Thailand

Regional training course on local/indigenous institution and co-management was an activity of Human Resource Development on Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region. The objectives of the training was to transfer technical knowledge to fisheries officials in order to recognize the importance of local/indigenous institution for poverty alleviation and food security; to promote local/indigenous playing key role

to practice and function in right-based fisheries and co-management to achieve poverty alleviation and food security and to prepare a best fitted and practical proposal for on-site HRD activities.

3.4 Training of the Trainers on Inland Fisheries Development at MFRDMD, Kuala Terengganu, Malaysia

SEAFDEC/MFRDMD was tasked to lead the implementation of one of the thematic areas which is the Inland Fisheries Development. Hence, the HRD Training of Trainers on Inland Fisheries Development was developed and conducted at MFRDMD, Kuala Terengganu, Malaysia on 16-25 February 2009 which the objectives are as follow.

- 1) To increase awareness on issues affecting inland fisheries.
- 2) To increase the capacity of participants in imparting knowledge and information to the target groups.
- 3) To provide ideas and suggestions on sources of supplementary income to the target groups.
- 4) To prepare proposals for on-site HRD activities to be implemented by course participants in their countries.

3.5 Training of the Trainers on Backyard Fishery Post harvest Technology at MFRD, Singapore

MFRD organized and conducted “The Regional Train-the-Trainer Workshop on Backyard Fishery Post-Harvest Technology” from 3-11 March 2009. The main objective of the HRD activity was to train the project focal points in the respective participating countries who are relevant fisheries government officials, extension workers and those working at the local level of selected rural fishery communities on basic fish handling and quality preservation, and simple fish processing technology to make value-added products from low-value edible fish which can be carried out by the backyard industry in rural fishery communities to enhance their livelihood. The focal points will then be responsible for organizing relevant on-site HRD activities in their respective countries to train the rural fishery communities. The training manual and materials used in the workshop were developed by MFRD for this project from training materials developed by MFRD in the BIMP-EAGA HRD project as well as the Special 5-year and Japanese Trust Fund 2 projects on utilization of under-utilized freshwater and marine fish species and small pelagic fish resources respectively.

3.6 HRD on-sites activities

The implementations of on-site HRD activities are conducted in eight countries within the ASEAN region (Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand and Vietnam). After the 1st RTC, it was agreed that the pilot HRD activities are conducted within two sites (inland/marine areas) in respective countries, which the participating countries prioritize HRD thematic issues and then select only 4 thematic issues to be implemented. At the on-site HRD activities, participating countries will mobilize the HRD materials, which have been developed under supervision of SEAFDEC Departments and translate into local language. According to the series of HRD Activities on Thematic Areas, on-site HRD activities will be implemented in collaboration with the host governments which propose the on-site HRD activities.

Both activities are considered as inter-relation and a series of training, which need contribution from all SEAFDEC Departments. All participants are expected to share their experiences in implementing the on-site HRD activities in theirs and strengthen their co-operation to extend the activities in the future.

Each activity of the on-site HRD will be carried out by SEAFDEC Secretariat and the Departments in collaboration with the participating countries based, and along line with the

previous HRD activities on thematic areas that will be conducted by respective Department. Both activities are considered as inter-relation and a series of training, which need contribution from all SEAFDEC Departments. A detail of operational plan for on-site HRD activities is as follows:

Country	Proposed Thematic Areas	Proposed schedule	Remark
Local/Indigenous Institutions and Co-management			
Philippines	Santa Ana village, Cagayan Province	21-25 September 2009	Completed
Thailand	Mae Rumpheung Small-scale fisher group, Rayong province	14-18 September 2009	Completed
Cambodia	Kampong Thom province	7-13 September 2009	Completed
Laos PDR	Nam ngeum reservoir, Vientiane	28 September-3 October 2009	Completed
Vietnam	Nam Phu commune, Tien Hai district, Thai Binh province	<i>To be confirmed</i>	Preparing
Indonesia	Tegalrejo Village, Sawit District, Boyolali Central Jawa	22-27 November 2009	Preparing
Malaysia	Kuala Serau. Kuala Lipis, Pahang	To be confirmed	Preparing
Responsible fishing Technologies			
Philippines	Catbalogan city, Samar province	28 September-2 October 2009	Completed
Thailand	Mae Rumpheung Small-scale fisher group, Rayong province	14-18 September 2009	Completed
Laos PDR	Namngeum reservoirs, Tulakhom district, Vientiane province	21-25 September 2009	Completed
Vietnam	Nam Phu commune, Tien Hai district, Thai Binh province	<i>To be confirmed</i>	Preparing
Myanmar	Pyapon township, Ayeyarwaddy division	9-12 November 2009	Preparing
Backyard fishery post harvest technology			
Thailand	Mae Rumpheung Small-scale fisher group, Rayong province	<i>To be confirmed</i>	Preparing
Philippines	Santa Ana village, Cagayan Province	<i>To be confirmed</i>	Preparing
Laos PDR	Donxay Oudom and Sengsawang, Vientiane province	<i>To be confirmed</i>	Preparing
Myanmar	Pyapon, township, Ayeyarwaddy division	23-29 November 2009	Preparing
Indonesia	Tegalrejo Village, Sawit District, Boyolali Central Jawa	22-27 November 2009	Preparing
Cambodia	Preah Sihanouk province	12-19 October 2009	Completed
Malaysia	Teluk Ketapang, Kuala Terengganu	<i>To be confirmed</i>	Preparing
Rural aquaculture			
Philippines	Catbalogan city, Samar province	28 September-2 October 2009	Completed
Laos PDR	Nalao crusters Phonehook district, Vientiane province	1-7 September 2009	Completed
Vietnam	Nam Phu commune, Tien Hai district, Thai Binh province	<i>To be confirmed</i>	Preparing
Indonesia	Tegalrejo Village, Sawit District, Boyolali Central Jawa	20-23 October 2009	Completed



Malaysia	Teluk Ketapang, Kuala Terengganu	<i>To be confirmed</i>	Preparing
Cambodia	Preah Sihanouk province	11-17 November 2009	Preparing
Myanmar	Pyapon, township, Ayeyarwaddy division	16-22 November 2009	Preparing
Inland fisheries development			
Thailand	Chon buri Province	<i>To be confirmed</i>	Preparing
Cambodia	Kampong Thom province	21-27 September 2009	Completed
Vietnam	Nam Phu commune, Tien Hai district, Thai Binh province	To be confirmed	Preparing
Indonesia	Tegalrejo Village, Sawit District, Boyolali Central Jawa	20-23 October 2009	Completed
Malaysia	Kuala Serau, kuala Lipis, Pahang	<i>To be confirmed</i>	Preparing
Myanmar	Pathien District, Ayeyawady Division	23-29 November 2009	Preparing

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Second Regional Technical Consultation on Fisheries Human Resources Development (HRD) for Poverty Alleviation	To be confirmed	To be confirmed

4.2 Expected Outputs

Second Regional Technical Consultation on Fisheries Human Resources Development (HRD) for Poverty Alleviation will be convened to achieve the following objectives:

- 1) to finalize the activity of the project to evaluate the project activities;
- 2) to identify the follow up activities to be conducted with respect to the poverty alleviation by fisheries intervention;
- 3) to share the experiences in implementing the on-site HRD activities;
- 4) The proceedings of RTC will be used as basis for the project final report; and
- 5) to prepare a best-fitted and practical proposal for on-site HRD activities.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Information Collection of Highly Migratory Species in Southeast Asian Waters
Lead Country: The Philippines
Lead Department: SEAFDEC Secretariat
Total Duration: 2008-2012

1. INTRODUCTION

Tuna species are ones of the highly migratory species, have the greatest commercial value of the tunas and billfish resource of the World. In the Southeast Asia waters tunas are also commercially important marine resource for exports to the Japan and EC countries, as well as for the domestic consumptions as valuable protein resource. Linkage to the neighboring Regional Fisheries Management Organization (RFMOs) namely IOTC and WCPFC, Southeast Asian Region is identified under those RFMOs. At present, stock structure of tuna distributed in the region particularly in the South China Sea are still unclear and without the knowledge of the real stock structure, appropriate resource management at national level cannot be achieved. Tuna longline and artisanal purse seine associated with FADs, handliners and drift gillnet are the most important gears operated in the in the South China Sea areas and neighboring sea toward to the West Central Pacific Ocean especially in Celebes Sea. Under such a situation of tuna production based on harvesting of the Southeast Asian countries, therefore SEAFDEC proposed to conduct the information/data collection of the tuna production harvested in the Southeast Asian region in particular the South China Sea covering four main countries namely The Philippines, Vietnam and Indonesia and Thailand for the 1st Phase, and will include the remaining Member Countries in the later phases.

In 2008 the project focused on the review of the existing information of the catch productions including for all tuna species such as yellowfin tuna, bigeye tuna, albacore tunas and neritic tunas landed in the relevant member waters under the national statistical programs. To improve of the tuna data collection frameworks and evaluate the actual status of tuna productions, the working groups on tuna statistic was formed regarding this the national focal points from the 4 selected countries was nominated by relevant Member Countries. 1st Meeting of the Working group on Tuna was organized with the aims to introduce the structure and goal of the projects, as well as to reviews the existing tuna statistical program.

2. PROGRAM

2.1 Objectives

- 1) To evaluate the status of tuna fisheries/productions in the Southeast Asian waters;
- 2) To evaluate the tuna production in each sub-regional sea areas such as in Celebes Sea, Sulu Sea and some part of the South China Sea, etc.;
- 3) To buildup the data collection framework through fishing data logbook to clarify the fishing area of catch; and
- 4) To support fishery management of tuna at sub-regional areas.

2.2 Program description

1st phase of the project will be focused in 4 main countries namely Indonesia, the Philippines, Vietnam and Thailand. Based on new framework on tuna information collection, the origin of tuna caught and landed at selected landing sites will be investigated. A working group party was

established in order to perform discussion and planning for data gathering at national level. Based on tuna production from identified sea areas in each country, a total production by species at each sub regional sea areas will be estimated. In Vietnam, since the existing tuna statistic are not available yet, building up the tuna data collection framework will be worked in closely with the national statistical program. For the Philippines, Thailand and Indonesia, accuracy of tuna production based on estimated from the statistical program will be cross checked at the selected landing sites. Overall fishing areas at each landing sites for each species of tunas will be clarified for further improvement of the national tuna data collection.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

In 2009, the project supported to the relevant countries on tuna data collection at the 4-6 selected landing sites in selected countries in order to clarify the fishing areas of tuna catch and to evaluate the total production from each particular sub regional areas. The 2nd meeting of the working groups on tuna was held in Hanoi, Vietnam in order to update the project implementation on tuna data collection.

Project/Activity Title	Duration	Remarks
1. Consultation/Working Party Meeting		
<ul style="list-style-type: none"> The 2nd Working group Meeting on tuna information collection covering SEA waters was organized at the Centre for Information Technology and Statistics, Hanoi, Vietnam 	13-16 July 2009	To update the tuna data collection and to finalize the plan for 2010 activities.
<ul style="list-style-type: none"> Participate to the Second Joint Meeting of Tuna RFMOs 2009 which will be held at San Sebastian, Spain, 	29 June 3 July 2009	To update the current global tuna situation and future programs
2. Development of Tuna Database		
<ul style="list-style-type: none"> Review data worksheet for information collection and Designing all data inputs and outputs of the outcome 	April-July	
<ul style="list-style-type: none"> Continue developing the database system 	July-December	
3. Data collection at national level		
<ul style="list-style-type: none"> Continue the data collection at selected landing sites based on the recommendation from the 1st and 2nd Meeting of the Working Group on Tuna 	January - December	
<ul style="list-style-type: none"> Preliminary analysis on the trends of tuna fisheries in the Southeast Asia waters based on the existing data and collected data supported by the project. 	July - November	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

Activity 1: Workshop/Consultation/Working Party Meeting

In 2010, 3rd meeting of the working group on tuna will be conducted in the Thailand in order to progress one year cycle of the implementation work on tuna information collection based on new frame works agreed in the 1st working group meeting. The meeting will also discuss on the developing of appropriate tuna fishing logbook for sustainable development of fisheries in the region. The logbook will cover all types of gears and all species of tuna and neritic tuna caught in the Southeast Asia waters. In addition, the detailed activity for 2010 will also be finalized at the WG meeting.

To finalize the tuna production in the Southeast Asia waters in particular the Areas covering by WCPFC, the consultation visit to Brunei Darussalam and Malaysia for data collection based on National Statistic will be conducted.

Participating to the Tuna Regional Fisheries Management Organization meeting such as IOTC and/or WCPFC in order to update tuna production in the region based on the study and sharing information is planned under this activity.

Activity 2: Development of Regional Tuna Database

Continue on development of regional tuna database covering the area of the Southeast Asian region. Supporting for raw data input to the regional database. In 2010, the data from Brunei Darussalam, Malaysia, and Cambodia will be added into database. Updating all tuna information to the database will be made.

Activity 3: Data Collection and analysis

Supporting for the tuna data collection in the participating countries will be continued. The data of tuna catch based on landing and logbook will be analyzed, based on the outcome improvement of data collection would be made again. Based on the information collection, the tuna production at each fishing areas in the Southeast Asia will be analyzed for fisheries management objectives. Publication on the tuna productions by species by fishing management areas will be published

4.1 Planning of the Project Activities for 2010

Project/Activity Title	Duration
1) Consultation/Working Party Meeting	
<ul style="list-style-type: none"> • 3rd Working Group meeting for party one (ID, PH, TH, VN) for progress work on data collection. And finalization of detailed activity for 2010 	February
<ul style="list-style-type: none"> • Consultation visit to Malaysia and Brunei for tuna data collection 	June-July
<ul style="list-style-type: none"> • Participation of the national/international tuna conference/ meeting for data collection 	March-October
2) Development of Regional Tuna Database	
<ul style="list-style-type: none"> • Continue Developing of Regional database for Online Access covering new 4 countries. 	March-December
<ul style="list-style-type: none"> • Add tuna data from Brunei, Malaysia and Cambodia and Myanmar 	July-December
3) Data collection from Landing/and Analysis	
<ul style="list-style-type: none"> • Support for Data Collection from Landing and logbook 	March-December
<ul style="list-style-type: none"> • Review data worksheet for information collection and Designing all data inputs and outputs of the outcome for new 4 countries (MY, MM, BN and CAM) 	March-June
<ul style="list-style-type: none"> • Promotion on the tuna fishing logbook in Vietnam, Thailand and The Philippines 	March - December
<ul style="list-style-type: none"> • Overall regional analysis on status of tuna production by species and management areas in the Southeast Asia 	August-December

4.2 Expected Outcomes

- 1) Preliminary report on the Trends of tuna fisheries in the Southeast Asia waters
- 2) Initiatives on use of fishing tuna logbook to support and improve the tuna statistical program
- 3) Full operation of the tuna statistical program (for both oceanic tuna and neritic/coastal tuna in Vietnam waters)

**PROGRAM DOCUMENT**

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
 Program Title: ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020
 Lead Department: SEAFDEC Secretariat (in collaboration with all Departments)

**Proposal of the ASEAN-SEAFDEC Conference on Sustainable Fisheries
 for Food Security Towards 2020 (Draft as of 05/11/09)**

Executive Summary of the Project Proposal
Project Title: ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020
Project Type: The Conference 1) to support ASEAN community building by promoting greater awareness of the ASEAN identity, people-to-people interaction, and close collaboration among stakeholders in ASEAN in the joint activities through human capacity building, in accordance with the implementation of ASEAN Charter to achieving the ASEAN Community Integration; and 2) to make every effort to contribute to promoting development and cooperative strategies conducive to mutual support, equal economic development, improvement of livelihood and alleviation of poverty, and ensuring long-term food security with contribution from fisheries
Executing Agency: The Joint Conference Secretariat, composed of the ASEAN Secretariat, the Southeast Asian Fisheries Development Center (SEAFDEC), and the ASEAN Member Countries represented by the Department of Fisheries (DOF), Thailand
Eligibility: SEAFDEC is an intergovernmental organization established in Southeast Asia being responsible for the promotion of sustainable fisheries. Based on its technical competence in various disciplines of fisheries, SEAFDEC over the past 41 years has played a significant role in promoting sustainable fisheries development in the region. Towards implementation of the Conference, ASEAN Member Countries and SEAFDEC will achieve the following: 1) Promotion of ASEAN awareness on sustainable fisheries and its contribution to food security amongst its people and the world beyond; 2) Promotion of closer relations amongst the people of ASEAN, their greater participation in ASEAN activities, and the reinforcement of ASEAN solidarity as one community; and 3) Support of development cooperation in addressing the issues of poverty alleviation, other socio-economic development, and new emerging fisheries related issues including climate change and its impact to fisheries
Priority: ASEAN Community Integration (the ASEAN Economic Community (AEC), and the ASEAN Socio-Cultural Community (ASCC) (by 2015); ASEAN Integrated Food Security (AIFS) Framework and the Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS) (2009-2013); ASEAN vision 2020; Hanoi Plan of Action stress the importance of the food security in ASEAN region; and the Resolution and Plan of Action on Sustainable Fisheries for Food Security in the New Millennium (adopted in 2001)
Objectives: Development of the regional policy on Sustainable Development of Fisheries and Contribution of Fisheries to the Food Security in the ASEAN region, through development of the next “Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region (Towards 2020)”
Participants: For the Conference proper, it is envisaged that about five hundred participants from all ASEAN countries, which composed of the relevant Ministers, high ranking Governmental officials, Government technical staff, researchers; and representatives of industries and international and regional organizations.
Project Duration: A total of 24 months, including the preparatory works
Proposed Commencement Date: July 2009
Proposed Completion Date: June 2011
Total Budget Requested: US\$ 398,150 (Detailed estimated expense is attached)

Project Title: ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020

1. Problem to be Addressed

Guided by the Resolution and Plan of Action adopted at the Millennium Conference in 2001, almost the past ten years SEAFDEC and ASEAN Member Countries have made significant progress in promoting sustainable fisheries in the region. With the deteriorating state of the world's ecosystem and environment brought about by climate change, and social and economic factors particularly global economic crisis, it is necessary that the Southeast Asian region keep abreast and be able to address future challenges faced by our fisheries. At the start of the new decade, the region should firstly review the development of the fisheries in the past based on the implementation of activities in line with the Resolution and Plan of Action, and secondly, have a clear policy on how fisheries sector can achieve sustainable fisheries in the future. Special emphasis should also be given to the sustainable contribution of fisheries to regional food security and poverty reduction for the increasing population in the region. In addition, as the people in the region fully depend upon fisheries production, the impact of the reduced supply of fisheries product, increasing fuel/oil price will not only affect the food security, but also have the regional implications on their livelihood, socio-economic situation and foreign exchange earnings.

2. Background

The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: "Fish for the People" was held in November 2001. The Conference was in response to widespread regional concern over unsustainable fisheries practices, which may negatively affect future fish supplies for food security and the economic and social well-being of people in the ASEAN region. Attention focused on fisheries issues of specific concern to the ASEAN region, the goal being to coordinate policies and actions within the region and harmonize these with policies and actions at the international level. The Millennium Conference adopted the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region in 2001 to serve as policy framework for formulating and implementing programs, projects and activities aimed at promoting sustainable development of fisheries in the ASEAN region.

Throughout the past ten years, SEAFDEC has been providing technical assistance to the ASEAN countries by implementing activities that address the various issues towards the sustainable development of fisheries as guided by the Resolution and Plan of Action. With support from the ASEAN Foundation, from 2001-2010, SEAFDEC in close cooperation with the ASEAN Member Countries implemented programs, *i.e.* on "Promotion of Sustainable Fisheries through South-South Cooperation in the ASEAN Region", "Capacity Building on the Improvement of Fishery Statistical Systems in the ASEAN Region", "Human Resource Development (HRD) for Sustainable development Fisheries in Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA) Region", "Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region", and "Promotion of "One Village, One Fisheries Products (FOVOP)" System to Improve the Livelihood of the Fisheries Communities in the ASEAN Region", which are also envisaged to improve human capacity in the Member Countries in the various fisheries-related aspects and enhance the contribution from fisheries to food security in the ASEAN region. It is envisaged that the lessons learned through these programs implementation are envisaged to also help paving ways forward to the improved food security and better livelihood of people in the region.

However, with the deteriorating state of fishery resources and the emerging fisheries-related issues during the past decade as mentioned above, the need to urgently solve the problems towards achieving sustainable fisheries development and food security was expressed, and the 31st of SEAFDEC Program Committee held in Singapore in November 2008 discussed the

concept/ideas in the organization of another Conference in order to discuss the issues and to develop the new decade Resolution and the Plan of Action. The concept proposal was developed and submitted to the 41st SEAFDEC Council held in Fukuoka during 7-10 April 2009. The Council endorsed the concept proposal and the conduct of the Conference and recommended SEAFDEC to further develop the detailed proposal. The Proposal of the Conference was brought up to the 17th Meeting of the ASEAN Sectoral Working Group on Fisheries (17ASWGFi) held from 3-5 June 2009 in Vietnam. The Meeting endorsed and supported SEAFDEC for the planning and conduct of the Conference, including the possibility of cash contribution from the private sector.

To follow-up the decisions and recommendations made by the SEAFDEC Council and ASWGFi Meeting, detailed proposal of the Conference, including program and preparatory work was developed and discussed at the SEAFDEC Department Chiefs' Meeting held in Bangkok from 25-26 June 2009. The detailed proposal of the Conference will be further submitted for consideration and support at the Special SOM-30AMAF Meeting, to be held in Ho Chi Min, Vietnam in early August 2009 and the AMAF Meeting in October 2009, respectively. All through these meetings, the proposed Conference was regarded as the highest priority especially from the viewpoint of sustainable development of fisheries, food security and poverty reduction, which was accorded with the strong interest of ASEAN in supporting the implementation of the ASEAN Community Integration (the ASEAN Economic Community (AEC), and the ASEAN Socio-Cultural Community (ASCC) (by 2015); ASEAN Integrated Food Security (AIFS) Framework and the Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS) (2009-2013); ASEAN vision 2020; and Hanoi Plan of Action stress the importance of the food security in ASEAN region.

It is envisaged that the continue support from the ASEAN Foundation in the organization of the ASEAN-SEAFDEC Conference and the development of the new decade Resolution and Plan of Action would contribute to achieving sustainable fisheries development and ensuring the contribution of fisheries to food security in the ASEAN region by the year 2020, as well as supporting ASEAN in achieving the ASEAN community building by the year 2015.

3. Problem Analysis

a. Problem analysis

Over the past ten years, Fisheries related agencies of the ASEAN Countries have exerted their utmost effort and made significant progress in promoting sustainable fisheries in their territorial waters, however, most of the countries have encountered in difficulties for effective implementation of fisheries management measures in assuring sustainable fish supply for food security in the long term. With the deteriorating state of the world's ecosystem and environment brought about by climate change, and social and economic factors particularly global economic crisis, it is necessary that the Southeast Asian region keep abreast and be able to address future challenges faced by our fisheries. To increase the competitiveness of fisheries in the region in addressing food security and poverty reduction, and to assist countries to adapt with the emerging situations/issues *e.g.* climate change, international fish trade, economic crisis, it is therefore an opportune time to review and discuss the implementation of the Resolution and Plan of Action in order to develop the next decade regional policy direction and plan of action on sustainable fisheries for food security in the ASEAN region.

Therefore, the coordinated actions at regional level are required as it yields advantages. First, the coordinated action at the regional level may ease a national Government to implement the required actions if these are based on the regionally agreed policy, in view of obtaining the understanding of national industries. Secondly, regionally coordinated action will provide appropriate guidelines for the countries in ASEAN, which cannot individually take appropriate

action toward achieving sustainable fisheries due to their current development status. Thirdly, to ensure sustainable development for the benefit of present and future generations and to place the well-being, livelihood and welfare of the peoples of the ASEAN community building process. It is therefore extremely important to organize the proposed Conference in order to develop the regional policy for the ASEAN region on the sustainable fisheries development especially with the focus on contribution of fisheries to food security.

The next decade regional direction and plan of action could therefore steer ASEAN Member Countries towards new directions in furthering development of sustainable fisheries and its contribution to food security, poverty reduction and accommodating the new emerging issues (e.g. climate change, international fish trade, economic crisis, etc.) in the region particularly to raise the socio-economic status, alleviate poverty and enhance food security for the people of the region. It is also expected to build closer collaboration through increased direct participation and solidarity among countries in the region as well as seeking funding support from external donors.

b. Regionality

Due to the increased concerns on the global environment, there is a trend that the international fisheries societies have taken active roles on the sustainable fisheries issue. However, under such globalization process, regional specificity has hardly been considered. In ASEAN region, there are some specific situations to consider the appropriate actions including the facts that 1) ASEAN people fully depend on fish for its culture including their diets, livelihood and other economic activities; 2) major part of the ASEAN fisheries is categorized as a small-scale/coastal fisheries, while those of developed countries are considered as industrial fisheries; and 3) fisheries resources in ASEAN region is regarded as the multi-species composition, while most of the developed countries harvest their fish under different ecosystem. The differences in culture, economic, structure of fisheries and ecosystem make the global standardization difficult to apply for the ASEAN situation. In 2006, the Southeast Asian region produced almost 24 million MT of fishery products (including aquaculture products). This contributed about 15% of world fisheries production. It is therefore very important that ASEAN to revisited the Resolution and Plan of Action 2001 and develop the policy for fisheries development and food security for the next decade. It is believed that the proposed Conference will contribute to the reinforcement of ASEAN solidarity through the fisheries cooperation in order to effectively respond to current and future challenges and opportunities.

c. Participation

During the Conference proper, for the main plenary session, the high ranking officials from fisheries related Governmental agencies, possibly with the Ministers are envisaged to participate and conclude “Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security” which will be used as a policy guidance to promote the sustainable fisheries for the coming few decades. Prior to the main plenary session, several technical panels on the important topics will be organized in order to ensure the successful organization of the Conference. Series of preparatory technical works in particular the Regional Technical Consultations (RTCs) will be undertaken by the initiatives of SEAFDEC by its fund (outside of the proposal) before the Conference to conclude the “technical recommendations” which will be the technical basis for the Decade Declaration. Approximately about 300 participants including the ASEAN government officials and researchers; the representatives from the industry; and International/Regional Organizations are envisaged to participate in the Conference. Throughout the process, wider and more concerned people in the region will be indirectly involved in the Conference.

d. Beneficiaries

Although the direct participation to the Conference proper is approximately about 500 people, the ultimate beneficiaries will be people of the ASEAN who are not only involved in the fisheries but

also general consumers. Organization and participation of the Conference is only the beginning. It is believed that the implementation of the agreed “Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region (Towards 2020)” will deliver greater benefits to the people in ASEAN.

4. Objectives

a. Development Objectives

Development objective of the project is to achieve sustainable fisheries development in the ASEAN region, therefore sustainable and stable fish supply that contributed to food security and poverty reduction could be ensured. In this connection, the proposed Conference can be regarded as the next decade milestone to reach such goal. Normally, when such Conference is organized by the specific needs, it sometimes fails to follow-up the conclusion reached at the Conference. In order to avoid such constraints, SEAFDEC has developed the program thrusts as an integral part of the Conference, although the financial arrangement of the program is outside this proposal. By integrating the Conference with these programs, SEAFDEC can extend the support to the ASEAN Member Countries to implement the required activities following the Decade Resolution and Plan of Action concluded at the Conference.

b. Project Objectives

The Project objective is to organize the ASEAN-SEAFDEC Conference on Sustainable Fisheries Development and Food Security Towards 2020” based on the development objective and regional needs. The Conference is aimed to develop the regional policy for the next decade on “**Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region (Towards 2020)**”.

5. Success criteria and outputs

a. Success Criteria

- 1) Effective implementation of all planned preparatory work is a key for the successful organization of the Conference. This will be managed by ASEAN-SEAFDEC Steering Committee and Advisory Committee;
- 2) SEAFDEC as outside of the project, has to conduct all required technical work for the Conference;
- 3) Preparation of high level working documents for the Conference and practical proposals including the draft “Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security”; and
- 4) In order to achieve the development objective, the timely implementation of the follow-up programs of the Conference (outside of the project, as SEAFDEC Program Thrusts) is also counted as an important factor.

b. Outputs

The following outputs are anticipated through the successful organization of the Conference:

- 1) “**Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region (Towards 2020)**”, which will be used as a policy principle in achieving the sustainable fisheries for food security in the coming decades;

- 2) Series of Technical Recommendations will be used either as a technical basis for the Decade Resolution and Plan of Action, or as technical guideline for the specific subject matters;
- 3) Awareness building on issues of the sustainable fisheries and food security through the participation of the Conference; and
- 4) Reinforcement of ASEAN solidarity and closer cooperation in the field of fisheries by discussing and adopting the above policy instruments, in accordance with the implementation of ASEAN Charter to achieving the ASEAN Community Integration

6. Indicative Work Plan

Refer to *Appendix 1*.

7. Management and Implementation Arrangements

The project will be promoted by the ASEAN-SEAFDEC joint Conference Secretariat located at the SEAFDEC Secretariat: Suraswadi Building, Kasetsart University Campus P.O. Box 1046 Kasetsart Post Office Bangkok 10903, Thailand.

The Project will also be supported by the ASEAN-SEAFDEC Steering Committee and Advisory Committee. In addition, the coordination and working mechanism with SEAFDEC Departments and ASEAN-SEAFDEC Member Countries established in SEAFDEC will be fully mobilized for the preparation of the Conference. The followings are the proposed implementation arrangements:

- 1) **Timing of the Conference:** June 2011
- 2) **Venue of the Conference:** Bangkok, Thailand
- 3) **Organization of the Conference:** The Conference will be jointly organized by ASEAN and SEAFDEC and hosted by Thailand. Therefore, all preparatory arrangements should be in line with their standpoint.
- 4) **Structure of the Conference Proper:** The Conference composes of the following sessions (refer to *Appendix 2*)

a. Inaugural Session (one quarter of a day):

The Inauguration Session will be venue to introduce the Conference and present the outcomes and achievement in the implementation of the Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region, adopted at the Millennium Conference in 2001. The opening session will also introduce the framework and arrangements for technical working sessions that support the Ministerial Conference.

b. Plenary Session I (three quarters of a day):

To guide and fine tune for all participants on the Conference theme on “Sustainable Fisheries for Food Security”, the **Plenary Session I forms the basis for the overall discussions of the Conference** before breaking into the technical panels in the following 2 days on:

- i. Outlook of Fish Supply and Demand at the Global and Regional Levels Towards 2020
The first presentation identifies as a project gap between fish supply and demand in the region in the year 2020, and suggests how the ASEAN Member Countries and regional organizations, including SEAFDEC, can focus on ways to reduce this shortfall.
- ii. Cross-cutting issues, *e.g.* Food Security, International Trade Related Issues, Environmental Issues, Climate Change, Energy Optimization, etc.

c. Technical Session (2 days):

The Technical Session will be organized and will conclude the technical recommendations to develop the regional technical policy on the selected issues. Salient points of all the technical recommendations will be accommodated to form the **“Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region (Towards 2020)”**. Concerning the participants, technical officers from ASEAN and SEAFDEC Member Countries are expected to participate in this session. In addition, technical officers from non-ASEAN but Asian countries, the representatives of international and regional organizations, as well as the representatives of private industry are expected to participate in the Session.

Under the Technical Session, 4 Panels will run simultaneously

- I. Sustainable Aquaculture
- II. Sustainable Fisheries Management I “Marine Fisheries”
- III. Sustainable Fisheries Management II “Inland Fisheries”
- IV. Post-harvest and Safety of Fish and Fishery Products

In each panel, the topics that need to be considered and the tentative sub-themes were identified as shown in **Appendix 3**. The detailed scope and context of each sub-theme will be further explored and finalized.

d. Plenary Session II (half day):

Relevant international and regional organizations, donors and academic institutions, which have provided financial and technical cooperation to ASEAN Member Countries and the organization of the Conference will participate. These organizations are invited to make presentations on their activities, policies, and status, as well as their future interest in strengthening their cooperation with ASEAN Member Countries. The main objective of this session is to identify and exchange views on new requirements for financial and technical cooperation in the fishery sector in the ASEAN Member Countries, and to identify the policies of the cooperating organizations in this respect.

e. ASEAN-SEAFDEC Senior Officials Meeting (SOM) (half day)

The ASEAN-SEAFDEC Senior Officials Meeting (SOM) will be organized to finalize the recommendations from the technical sessions and the draft “Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region (Towards 2020)” based on concluded technical recommendations from the Technical Session to be adopted by the ASEAN-SEAFDEC Ministers.

f. Ministerial Session (one day):

Opening session and followed by the adoption of the regional policy for the next decade on **“Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region (Towards 2020)”** by the participation of high-rank officials from ASEAN and SEAFDEC countries, the participation of ASEAN fisheries-related Ministers is also envisaged.

g. ASEAN Fisheries Exhibition (5 days):

The Exhibition will also be held simultaneously with the Conference. Considering that the required work is rather different from that of the Conference, the Exhibition will hence be separately handled. In this connection, the professional organizer will be contracted. Close communications with other international/regional organizations will be approached in order to

ensure the successful organization of the Exhibition and avoiding duplication of similar activities in the region during the planning period.

5) Preparation of the Conference

Series of Regional Technical Consultations (RTCs) will be organized. After all RTCs have been conducted, the Meetings for preparation of the Conference (Technical – drafting technical papers, and Administration) will be organized.

For successful conduct of the Conference, two Committees and two Sub-Committees will be established in order to make a proper preparation.

- a. **ASEAN-SEAFDEC Steering Committee:** The committee as decision making and consultation body for the organization of the Conference, is to be participated by the representatives of ASEAN Secretariat, SEAFDEC Secretariat and Departments, and representatives from DOF Thailand representing the ASEAN Member Countries;
- b. **Advisory Committee:** To provide advice on the programs planning of the RTCs and Technical component, and ensuring the support and cooperation of the Member Countries. Advisory Committee will be composed of the Members of SEAFDEC Program Committee and ASEAN-SEAFDEC Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG-ASSP);
- c. **Administrative Sub-Committee:** Coordination on administrative arrangement of the Conference; and
- d. **Technical Sub-Committee:** Coordination on the technical preparatory works to be conducted by the SEAFDEC and the ASEAN Member Countries.

In addition, the required technical works for each technical subject at regional and national levels will be conducted by the SEAFDEC Departments in collaboration with ASEAN Member Countries (outside of the project).

Preparation of the required Working Documents and other Documents

Various Working Documents presented in each Technical Panel Meetings and the draft “**Decade Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region (Towards 2020)**” will be prepared for the Conference (by one month ahead of the Conference).

8. Budget and Funding Arrangements

The required budget to be supported by the ASEAN Foundation is estimated for US\$ 274,775. Detailed estimated expense is referred as *Appendix 4*.

In addition to this there are also in-cash and in-kind contribution from other sources to the preparatory works and the conduct of the Conference, of which the details appear in *Appendix 5*.

Indicative Work Plan
Of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security and Exhibition in 2011

Events/Activities	2009						2010												2011					
	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Regional Technical Consultations (RTC)[1]																								
Advisory Committee Meeting[2] • First Meeting • Second Meeting					1d												1d							
Steering Committee[3] • First Meeting • Second Meeting					1d												1d							
Technical Sub-Committee Meeting • Ad-hoc meeting (Prep. works) • First Meeting • Second Meeting			1d					1d							1d									
Administrative Sub-Committee																								
National Seminar on Implementation of the Resolution and Plan of Action																								
Experts Meeting																			3 d					
The Conference and Exhibition																								5 d

[1] RTC will be organized by SEAFDEC budget outside of the Project Proposal

[2] 1st and 2nd Meeting of Advisory Committee be included in the agenda of the 32nd and 33rd Meeting of SEAFDEC Program Committee

[3] 1st and 2nd Meeting of Steering Committee will be held back to back with the 32nd and 33rd Meeting of SEAFDEC Program Committee

Appendix 2 of the Conference Proposal

STRUCTURE OF THE CONFERENCE (DRAFT)

13 June 2011

Inauguration and Plenary Session 1	
0800-0900	Registration
0900-1100	Inauguration <ul style="list-style-type: none"> • Keynote Speeches • Presentation on Outcomes and Achievement in the Implementation of Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region, adopted at the Millennium Conference 2011 • Introduction on Framework and arrangement for Technical Session
1100-1200	Coffee/Tea Break
1200-1400	Lunch
1400-1530	Plenary Session 1: 1.1 Presentation and Discussion on the Outlook of Fish Supply and Demand at the Global Level and in the ASEAN Region.
1530-1600	Coffee/Tea Break
1600-1730	1.2 Presentation on cross-cutting issues, <i>e.g.</i> Food Security, international trade related issues, environmental issues, Climate Change, energy optimization
1900-2200	Reception Dinner Hosted by Southeast Asian Fisheries Development Center

14-15 June 2011

Four Panels Run Simultaneously 0900-1730
 Coffee/Tea Break between each session; Lunch time 1230-1400 hrs.

Simultaneous Technical Panel Session*				
Panels	Panel 1	Panel 2	Panel 3	Panel 4
Panel Titles	Sustainable Fisheries Management I	Sustainable Fisheries Management II	Sustainable Aquaculture	Sustainable Utilization of Fish & Fishery Products

*Detailed panel schedules are on the following page.

16 June 2011

Plenary Session 2 Fisheries Cooperation	
0900-1030	Plenary Session 2: Presentation by Regional/International Organizations on Fisheries Cooperation Policies in the ASEAN Region
1030-1100	Coffee/Tea Break
1100-1230	Plenary 2 Continued and Closing of the Technical Panel Session
1230-1400	Lunch
1400-1530	ASEAN-SEAFDEC Senior Officials Meeting
1530-1600	Coffee/Tea Break
1600-1700	ASEAN-SEAFDEC Senior Officials Meeting (Continued)



17 June 2011

Participation in this Session is by invitation only,
The outcome will be available to the public in the form of a Press Release at the end the Session

Ministerial Session	
Morning	Opening of the Ministerial Session Report on the Technical Session Discussion and Adoption of the Outcome of the Conference
Afternoon	Joint Statements on the Decade Resolutions and Plans of Action on Sustainable Fisheries for Food Security for the ASEAN Region Statements by International/Regional Organizations Closing of the Ministerial Session
1615 hrs.	Press Release

**Detail of the Technical Panel Session
14-15 June 2011 (Tuesday-Thursday)**

Four Panels run simultaneously
Coffee/Tea Break between each session
Lunch time: 1230-1400 hrs.

Technical Panel Session				
Panels	Panel 1	Panel 2	Panel 3	Panel 4
Panel Titles	Sustainable Fisheries Management I	Sustainable Fisheries Management II	Sustainable Aquaculture	Sustainable Utilization of Fish & Fishery Products
14 June (Tuesday)				
0900-1230	1.1 Decentralization of Fisheries Management	2.1 Harvesting of under-exploited	3.1 Supply of Good Quality Seeds	4.1 Maximizing Utilization of Fish Catch
1230-1400	Lunch			
1400-1730	1.2 Right-based fisheries	2.2 Management of Fishing Capacity	3.2 Environment-friendly Aquaculture	4.2 improved Traditional Fish Products
15 June (Wednesday)				
0900-1230	1.3 Resource Enhancement	2.3 Indicators for Sustainable Fisheries	3.3 Getting out of the 'Fish Meal Trap'	4.3 Fish Quality, Safety and Management Systems
1230-1400	Lunch			
1400-1730	1.4 Responsible Fishing Technology and Practices	2.4 Fishery Statistics and Information	3.4 Healthy and Wholesome Aquaculture	4.4 Sanitary and Phytosanitary Measures
1900-2200	Reception Dinner Hosted by Department of Fisheries, Thailand			
16 June (Thursday)				
0900-1230	1.5 Inland Fisheries Management		3.5 Biotechnology for Aquaculture	4.5 Fisheries Subsidies
1230-1400	Lunch			
1400-1730			3.6 Aquaculture for Rural Development	4.6 Eco-labeling

Tentative Panels and Sub-themes of the ASEAN-SEAFDEC Conference (as of 26 June 2009)

Panel 1: Sustainable Aquaculture	Sustainable Fisheries Management		
	Panel 2: Marine Fisheries	Panel 3: Inland Fisheries	Panel 4: Post-harvest and Food Safety
<ul style="list-style-type: none"> • Maintaining environmental integrity of aquaculture • Eco-labeling • Mitigating impact of climate change • Aquaculture for rural development • Meeting social and economic challenges • Supply of good quality seed • Healthy and wholesome aquaculture • Biotechnology for aquaculture 	<ul style="list-style-type: none"> • Ecosystem Improvement (artificial reef, etc.) • Fish Refugia / Protected Area • Restocking/Enhancement • Resources Enhancement • Enhance Monitoring System (Data) • Enhance C System >Combating IUU & Open Access issues, Vessel Registration and Licensing • MCS • By-Catch and Discards • Eco-labeling • Mitigating impact of climate change • EAF(Impact from/to Ecosystem) incl. socio-economy • Community-based Management • Selective Fishing Techniques & Practices • Small Scale Fisheries • Rehabilitation of coastal habitat for food security 	<ul style="list-style-type: none"> • Fish Refugia/ Protected Area • Restocking/Enhancement • Ecosystems improvement • Community-based Ecosystem Improvement • Enhance Monitoring System (Data) • Eco-labeling • Restocking/Enhancement • Mitigating impact of climate change • EAF(Impact from/to Ecosystem) incl. socio-economy • Community-based Ecosystem Improvement • Meeting social and economic challenges • Small Scale Fisheries 	<ul style="list-style-type: none"> • Improving of Fish Handling & Preservation • Traceability • Quality, Safety and Control Systems for Fish Products • Improved Traditional Products

Note: A three dimensional perspective will be further developed to indicate that presentations under each Theme/Panel should reflect and make reference to the following cross-cutting issues: 1) ASEAN Food Security (refer to the ASEAN Strategic Plan of Action for Food Security (SPA-FS, 2009 – 2013), 2) Climate Change and Adaptation; 3) Social, Economic and Labour (mobility) aspects; 4) Trade/certificates; 5) Innovative/"modern" aspects of Fisheries and Environmental Management

Appendix 4 of the Conference Proposal

**Breakdown of Estimated Expense for the ASEAN-SEAFDEC Conference 2011
(to be supported by the ASEAN Foundation)**

1. The Conference

	ITEM	Cost (US\$)	No. person	Day(s)	Sub- total	Total
1.1	Travel expenses					71,250
	- Brunei	470	10	-	4,700	
	- Cambodia	350	10	-	3,500	
	- Indonesia	650	10	-	6,500	
	- Japan	1,200	10	-		
					12,000	
	- Lao PDR	250	10	-	2,500	
	- Malaysia	450	10	-	4,500	
	- Myanmar	700	10	-	7,000	
	- Philippines	620	10	-	6,200	
	- Singapore	600	10	-	6,000	
	- Thailand	-	10	-	0	
	- Vietnam	400	10	-	4,000	
	- SEAFDEC/AQD	620	5	-	3,100	
	- SEAFDEC/MFRD	600	5	-	3,000	
	- SEAFDEC/TD		5		0	
	- SEAFDEC/SEC		5		0	
	- SEAFDEC/MFRDMD	450	5	-	2,250	
1.2	Daily Subsistence Allowance	50	135	5		33,750
1.3	Accommodations (foreigner only)	50	125	5		31,250
1.4	Rental Fee for Conference Room/Package					44,500
	- Day 1 Plenary		135	1	12,000	
	- Day 2-3 (4 panels)		135	2	24,000	
	- Day 4		135	0.5	8,500	
1.5	Reception Dinner	75	135	1		10,125
1.6	Conference kits					5,400
	- Bags and stationary	20	135	-	2,700	
	- Conference documents and program handbook	20	135	-	2,700	
1.7	Transportations	400	-	5		2,000
	- Airport transportation services					
	- Domestic transportation (between hotels, Conference Venue, Reception dinner, etc.)					
	- Medical emergency services					
1.8	Conference Supplies	2,000	-	-		2,000
	- Supplies/facilities for Conference secretariat					
1.9	Contingency (about 4%)					8,000
					Total (1)	208,275

2. Consultants

	Item	Cost (US\$)	No. person	Period (months)	Sub-Total (US\$)
2.1	Honorarium for Consultants (refers to the TOR)	10,000	3	1	30,000
2.2	Travel Costs for Consultants	2,000	3	-	6,000
	Sub-total (3)				36,000

3. Other Expenses

	Item	Sub-Total (US\$)
3.1	Proceedings and other reports (printing/sending cost)	10,000
3.2	Exhibition for SAFDEC (5), ASEAN Secretariat (1) and ASEAN Countries (10) and Japan	(500\$x17 Booths) 8,500
3.3	Drawing Contest from ASEAN Countries (10) and Japan (1)	(1,000\$x11 Countries) 11,000
3.4	Communication	1,000
	Sub-total (4)	30,500
Grand Total (USD) (1+2+3)		274,775

Appendix 5 of the Conference Proposal

**Contribution from Other Sources
to the Preparatory Works and the Conduct of the Conference**

In addition to the financial contribution from the ASEAN Foundation, particularly to support the participation of the representatives from the ASEAN-SEAFDEC Member Countries (10 each) and the staffs of SEAFDEC Secretariat and Department (5 each) to the Conference, there are also contributions and support (both in-kind and in-cash) from various partners, *e.g.* SEAFDEC, ASEAN, other collaborating organizations, the Department of Fisheries Thailand and other ASEAN-SEAFDEC Member Countries, private sectors etc., which could be tentatively identified as follows:

In-cash contribution

<i>SEAFDEC</i>	Estimated Expenses (USD)
• Overall preparatory works and the conduct of Steering Committee Meetings, Technical/Administrative Sub-committee Meetings, and Expert Meetings	73,600
• Organization of regional consultations/meetings to provide technical inputs to the Conference	558,500
1. Training Workshop (RTW) on Community-based Freshwater Aquaculture for Remote Rural Areas of Southeast Asia	
2. Expert Meeting on Vessel Registration	
3. Regional Technical Consultation (RTC) on Biotoxins Monitoring in ASEAN	
4. 2 nd Meeting of the Regional Advisory Committee (RAC) on Fisheries Management in Southeast Asia	
5. RTW on Assessment of Fisheries Status in South and Southeast Asian Regions in collaboration with FAO	
6. RTC on Regional Cooperation in the Andaman Sea	
7. RTC on Conservation and Management of Sea Turtle in Southeast Asia	
8. RTC on Fisheries Information and Statistic for Planning and Management in the ASEAN Region	
9. RTC on Promotion of FOVOP System to Improve Livelihood of Fisheries Communities in ASEAN	
10. Regional Seminar on Integrated Coastal Resources Management	
11. RTC on International Fisheries Related Issues for 2010	
12. RTC on the Tagging Program for Important Small Pelagic Fishes	
13. RTC on Sustainable Aquaculture Development	
14. RTC on Adaptive Measures to Mitigate the Impact of Climate Changes to Fisheries and Aquaculture	
15. RTC on Sustainable Fisheries Development for Food Security and Poverty Alleviation	
16. RTC on Right-based Fisheries and Co-management for Inland Small-Scale Fisheries Management	
17. RTC on Enhancing of Fisheries Resources	
18. RTC on Ecosystem Approach to Fisheries, Responsible Fishing and Practices	
19. 3 rd Meeting of the Regional Advisory Committee (RAC) on Fisheries Management in Southeast Asia	
• Conference publicity activities: organizing press conferences (3,000 USD), publicizing through public media (2,000), preparation of VCD (3,000),	10,000

promotional materials (2,000), etc.)	
• Conference kit (for participants that are not supported by ASEAN Foundation (165 person x 40 USD)	6,600
• Supporting the participation of additional SEAFDEC staff to the Conference (30 person from Sec and TD + 10 person from MFRD, AQD and MFRDMD)	20,000
• Hosting of a Reception Dinner for participants (that are not supported by ASEAN Foundation) (165 person x 75 USD)	12,375
<i>ASEAN Secretariat</i>	
• Delegating representatives to participate in the Conference proper and delivering statement(2 person x 1,000 USD)	2,000
• Participating in the Conference Steering Committee and other technical preparatory works (3 person x 1,000 USD)	3,000
<i>Other collaborating organizations (incl. FAO)</i>	
• Providing experts/resources persons and technical inputs during the preparatory works (20 person x 1,000 USD)	20,000
• Delegating representatives to deliver organizational statements during the Plenary Session on “Fisheries Cooperation” (10 person x 1,000 USD)	10,000
<i>Department of Fisheries, Thailand (as host of the Conference)</i>	
• Supporting the participation of additional DOF officials to the Conference (50 person x 100 USD)	5,000
• Hosting of a Reception Dinner for participants (300 person x 75 USD)	22,500
• Hosting and arrangements for Ministerial and SOM Meetings (accommodation, meeting package, transportation, lesson officers, SOM and Ministers’ Dinners)	60,000
<i>ASEAN-SEAFDEC Member Countries</i>	
• Supporting additional national participants to the Conference (10 countries x 5 person x 1,000 USD)	50,000
<i>Private Sectors</i>	
• Organization of the Exhibition/Trade Fair	72,000
• Preparation of exhibition booths to display at the Conference (100 booths x 500 USD)	50,000

Estimated total contribution from other sources: **USD 975,575**

In-kind contribution

ASEAN, SEAFDEC and other organizations

- Providing technical inputs to the preparatory works and at the Conference proper
- Preparation of exhibition booths to display at the Exhibition/Trade Fair
- Implementation of follow-up activities to the Conference

ASEAN-SEAFDEC Member Countries

- Organization of national consultations/meetings to provide technical inputs to the Conference
- Organization of national drawing contests to enhance public awareness on fisheries and food security
- Preparation of exhibition booth to display at the Exhibition/Trade Fair
- Implementation of follow-up activities to the Conference

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Responsible Fishing Technologies and Practices (Fishing in harmony with nature)
Lead Country: Thailand
Lead Department: Training Department

1. INTRODUCTION

SEAFDEC Training Department has implemented the Project on Responsible Fishing Technologies and Practices in collaboration with Southeast Asian countries based on the project formulation prescribed by the Resolution and Plan of Action endorsed at the Millennium Conference in 2001 and also the regional program planning meeting in 2005 for the Special 5-year Program on Sustainable Fisheries for Food Security in the ASEAN Region (2006-2010).

The activities on the development and experiment on Juvenile and Trash Excluder Devices (JTEDs) have been conducted in the Asian region with the support of Japanese Trust Fund III in conjunction with the additional support of FAO/UNEP/GEF Project on Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of By-catch Reduction Technologies and Change of Management. Through those activities JTEDs have been recognized in the region as effective devices in the reduction of juveniles of commercial species caught by trawl fishing. As a result, several countries have already adopted the compulsory use of JTEDs in trawl fishing.

The research and study on the impact of fishing on the environment and ecosystem have been conducted in cooperation with the Department of Fisheries, Thailand, and the Bureau of Fisheries and Aquatic Resources (BFAR) of the Philippines with the support of Tokyo University of Marine Science and Technology, Japan, and Kasetsart University, Thailand.

The interaction between threatened species of international concern and fisheries has also been studied and investigated, whose focus is particularly on the effectiveness of the use of TEDs in reducing sea turtle mortality. Besides, the information and data on sea turtle mortality has been collected in the region in collaboration with Member Countries of SEAFDEC and with the assistance of countries of IOSEA/MOU in providing them. SEAFDEC has made a great contribution to many international meetings and conference through the presentation of its achievement in the promotion of the use of TEDs and circle hooks.

Another work is the compilation on fishing gear and methods in Southeast Asia. The survey for this purpose was conducted in most of Member Countries and found that fishing gear monographs of SEAFDEC are used as handbooks for fishermen and gear technologists in the region.

Under the current situation of high cost of fuel and increasing concern about global warming that most likely affects the environment, SEAFDEC Training Department proposed the development and promotion of energy saving technologies in fishing operations.

2. PROGRAM

2.1 Objectives

- 1) To promote responsible fishing technologies and practices through the introduction, demonstration, experiment and training in fishing gear selectivity and devices to reduce the capture of juveniles of commercial species, trash fish and by-catch of endangered species;

- 2) To review, investigate and study the effects of fishing such as light fishing on ecosystem and other effects of fishing on the bottom of the sea and environment;
- 3) To promote the reduction of mortality of threatened species such as sea turtles and animal due to interactions with fisheries and collect the information on the interactions; and
- 4) To raise awareness on responsible fishing by producing and disseminating promotional materials and working in cooperation with SEAFDEC Member Countries and other organizations at the regional and international level.

2.2 Program description

Since the year 2008, the implementation of the project has been supported by Japanese Trust Fund III, in conjunction with GEF/UNEP/FAO Project on Sustainable Tropical Shrimp Trawl and others such as Tokyo University of Marine Science and Technology (TUMSAT). TD will manage and continue all project activities as a responsible Department for this project. Collaborative arrangements with FAO, TUMSAT and DOF of Member Countries and other organizations and institutes will be made through the implementation of the project. They will include staff exchanges, the dispatch of experts and participation in meetings/workshops.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

3.1 Research and development of selective fishing gears and devices for reduced discards and by-catch of juvenile and trash in the region

JTEDs assessment was conducted in the Philippine, Indonesia and Vietnam from 13-17 July, 3-7 August and 7-11 September 2009 respectively. The questionnaires of crab trap were developed and interviewed with fisherman in Thailand during 2-3 June 2009. The program of research survey in Thailand was conducted to collect data and analyze them in October 2008. Moreover, the promotion and assistance on the use of JTEDs have been planed and will be implemented in October 2009.

3.2 Research and study of the assessment of impacts of various kinds of fishing gear and practice on fisheries resources, sea beds, environment and ecosystem

The experiment on light intensity and color of light that impact with fishing was conducted in Thailand and Indonesia from 8-12 June and 19-22 October 2009 respectively. Moreover, the preparation of survey on light fishing in Malaysia was planed. The study and survey on attitude of trap was conducted in Eastern part of Thailand from 20 to 24 July 2009. During 13 - 15 January 2009, the Regional Workshop on the Reduction of the Impacts of Fishing in Coastal and Marine Environment in the Southeast Asian Water was held in Bangkok, Thailand

3.3 Interaction between threatened species of international concern and fisheries

One day Workshop on Sea Turtle interaction was held on 12 January 2009 in Bangkok, Thailand. The assessment on the Implementation on TEDs and circle hooks was conducted in Vietnam from 20 to 24 April 2009. In order to exchange information in the network concerned, the representative of the project participated in Technical Workshop on Mitigating Sea Turtle Interaction in Coastal Fixed and Drift Gillnet and Pound Net Fisheries and The 29th Sea Turtle Symposium and associated meeting in Australia during 20-22 January and 13 - 19 February 2009 respectively.

3.4 Study and promotion on energy saving technology and alternative energy sources for fishing operations in Southeast Asia

Study on the use of natural gay for small fishing boats is going on. The alternative solar energy by the use of solar cell energy for aquaculture was designed and experimented. Otherwise, on-site training and workshop to promoted and demonstrated the use of wind energy for sail boats to

fisherman and fishery agency in Thailand was organized in February and May 2009. The promotion on the use of wind energy in Myanmar was planned for implementation in November.

3.5 Production of promotion materials and technical papers

The publication materials to promote JTEDs in Southeast Asian countries as a cartoon book which engaged JTEDs were planned. The title and detail of the cartoon book was created and illustration is going on.

Project Activities

Program/Project /Activities	Duration	Remark
Responsible Fisheries Technology and Practice		
1.1 Research and development of selective fishing gears and devices for reduced discards and by-catch of juvenile and trash in the region		
1.1.1 Assessment of JTEDs implementation	Jul, Aug	80%
1.1.2 Research and development on selective devices in trawl and other fishing gears	Jun, Oct	60%
1.1.3 Promotion on the use of selective fishing gears and selective devices	Oct.	90%
1.2 Research and study of the assessment of impacts of various kinds of fishing gear and practice on fisheries resources, sea beds, environment and ecosystem		
1.2.1 Research and study on impacts of light fishing on fisheries resources in Southeast Asia	Jan-Nov.	70%
1.2.2 Research and study on impacts of bottom trawl net, dredges, traps and others	Jan-Nov.	60%
1.2.3 Workshop on impacts of fishing including light fishing in Southeast Asia	Jan.	Completed
1.3 Interaction between threatened species of international concern and fisheries		
1.3.1 Information collection on interaction of endangered species and fisheries	Jan.-Nov.	70%
1.3.2 Study on the assessment of the implementation on interaction guidelines and its impact on fisheries	Apr.-Nov.	70%
1.3.3 Participation in international meetings for information exchange on interaction of endangered species and fisheries	Feb-Aug.	Completed
1.4 Study and promotion on energy saving technology and alternative energy sources for fishing operations in Southeast Asia		
1.4.1 Review on energy saving technology and alternative energy sources for fishing operations	Jan.-Dec	30%
1.4.2 Promotion on the use of wind energy for sail boats	Aug-Nov	80%
1.4.3 Study on the use of natural gas for fishing boats	Jan-Nov.	Going on
1.5 Production of promotion materials and technical papers		
1.5.1 Production and dissemination of information package	Jan.-Nov.	40%
1.5.2 Preparation of ICEC/FAO/FTFB meeting in Bangkok 2010	Jan-Nov.	Completed

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

The Project activity in 2010 will be included in the Program on “Assistance for Capacity Building in the Region to Address International Trade Related Issues”

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses
Lead Country:	Thailand
Lead Department:	Training Department
Duration:	2010 (SEAFDEC fiscal year)

1. INTRODUCTION

Regarding fisheries resources in Southeast Asian (SEA) region is currently heavily exploited. Most of the fisheries resources were harvested in the coastal zone of offshore area where the depths of waters lower than 100m. Consideration for the geo-topographic features in the region found that more than 50% of the sea area is classified as deep-sea and most of the fishers in the region have not utilized yet. It is expected that many potential resources such as in the un-trawlable areas, sea mounts, and deep-sea basins are existing in many seas in the SEA region. This is why SEAFDEC/TD proposed to identify these potential resources in cooperation with Member Countries. The activities will be conducted and developed together with the development of appropriate technology.

In addition to maximize the utilization of resources as well as to reduce the post-harvest losses, developing of the appropriate fish handling technology is one of the important issues to support the sustainable utilization of potential. As it was known that onboard fish handling and preservation techniques are main problems in many Member Countries which need to be developed. In Member Countries, there are different designs of fishing boat and different fish handling technologies, SEAFDEC will also look for appropriate and cost-effective technology for fishers to solve the problem of fish freshness/quality. Technology transfer to Member Countries will be one of the activities.

2. PROGRAM

2.1 Objectives

- 1) Conduct/support the actual survey, and analyze the potential fisheries resources of some economically and important species on the un-trawlable grounds in the Southeast Asian (SEA) countries, through the collaborative research programs/activities using MV SEAFDEC2 and/or other research vessels;
- 2) Research and Development (R&D) on the appropriate and responsible fishing gear and practices for sustainable development and management of the fisheries resources on un-trawlable grounds in SEA region;
- 3) R&D on the environmental and user friendly for reduction of the post-harvest losses for fish handling at sea, economically; and
- 4) Disseminate information on the potential resources on un-trawlable grounds, and technology transfer technology for reduction of its post-harvest losses.

2.2 Program description

Understanding the potential of under-utilized fisheries resources and promote their exploitation in a precautionary manner in the Member Countries through the collaborative research program among SEAFDEC and the Member Countries will be focused/developed (based on the utilization of MV SEAFDEC2 under the cost-sharing policy). The preliminary results from these collaborative surveys included new findings on the potential resources will be reported to individual concerned country.

From the regional point of view, further step of the programs is technology transferring of the appropriate fishing technology for harvesting of the under-utilized fisheries resources to SEAFDEC Member Countries, together with the technology transfer on the appropriate onboard fish handling technology to reduce the post-harvest losses and improving the fish quality and food safety levels.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
1) Data collection on fisheries resources	Aug - Sep	100% Completed Data collection on fisheries resources was made through the consultation visit for formulation of the actual survey in Indonesia, and actual survey was carried out using MV SEAFDEC2 in collaboration with Indonesia.
2) R&D on appropriate sampling gears, and environmental/users friendly fish handling techniques	Jan - Dec	50% Completed Four major sub-activities have been implemented under this category, including (i) development trap and hook-and-line for un-trawlable ground, (ii) development of appropriate fish handling techniques in collaboration with DOF-Thailand, (iii) Formulation on the review of the fish freshness detection in collaboration with Kasetsart University Lecturer, (iv) fishing trials on the fishing gear efficiency onboard MV SEAFDEC 2 and RV Chulaborn. The activities under item (i), (ii), and (iii) are the ongoing process.
3) Human resource development	Aug - Sep	100% Complete On-the-job training for researchers on exploitation of the fishery resources in un-trawlable ground has conducted onboard MV SEAFDEC2 and RV Chulaborn. In addition, the onsite trainings on environmental/users friendly fish handling and preservation techniques have organized in Surat Thani of Thailand and in Phu Yen of Vietnam.
4) Information dissemination	Jan - Dec	50% Complete Brochure, guidebook, CDs of information package on fishing gear, fish handling and preservation techniques has been produced and disseminated.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Activity 1: Data collection on fishery resources The collaborative research survey on potential of under-utilized resources in Member Countries will be conducted in cooperation with the national research program of each member country using of MV. SEAFDEC2, or carry out by supporting other research vessels in collaboration with the Member Countries. The survey areas will be focused in the EEZ of the Member Countries and/or trans-bordering areas, particularly in un-trawlable grounds. The results of the survey will be analyzed at the national and regional levels. In case that the actual survey by using MV.SEAFDEC2 could not be carried out, data collection will be made through various sources, such as the participation of	Jan to Dec	

the staff to the relevant meetings/workshops. Activity plan for this includes consultation visits, and fishery resources data collection through actual survey and/or from the meeting/workshop (either to be organized by SEAFDEC or other relevant initiatives/organizations).		
<p>Activity 2: R&D on appropriate sampling gears, and environmental/users friendly fish handling techniques</p> <p>To explore the under-utilized resources in the un-trawlable grounds, R&D on suitable fishing/sampling gears (<i>e.g.</i> deep-sea traps, longline, etc.), fishing operation techniques, and instrument and machineries will be continually carried out through the use SEAFDEC's and/or other research vessels. In addition, environmental/user friendly fish handling and preservation techniques, in particular for the high value species from un-trawlable grounds will also be continually developed. In addition, fishing trial for testing the gears/instrument will be carried out. For future practical tool that will be used for checking quality of catch, and based on the result form the review on freshness detection toolkit conducted in 2009, development of a model for the fish freshness testing/detection tool will be developed.</p>	Jan to Dec	
<p>Activity 3: Human resources development (HRD)</p> <p>The regional HRD programs/activities on: (i) sampling/fishing gear, techniques, and machineries; and (ii) environmental/user friendly fish handling and preservation techniques, will be carried out through shipboard training activities by SEAFDEC's and/or other research vessels in close collaboration with the Member Countries and other relevant initiatives. Activities under this program include: on-the-job training for research methods on the fisheries resources survey/exploration in the un-trawlable grounds; and onsite training course on the environmental friendly fish handling and preservation techniques.</p>	Feb to Dec	
<p>Activity 4: Information dissemination</p> <p>Information dissemination will be made through various sources, including SEAFDEC's Webpage, brochures, publications, information packages (CDs, DVDs, manual), reports, etc.</p>	Aug to Dec	

4.2 Expected Outcomes

- 1) Evaluation of the potential resources of some economically species on the un-trawlable grounds of Member Countries through the collaborative research/survey programs using MV SEAFDEC2 and other research vessels;
- 2) Development and promotion of the appropriate sampling gears, and environmental/users friendly fish handling techniques;
- 3) Human capacity building programs/activities on research works concerning harvesting/sampling on the un-trawlable grounds; and
- 4) Set of information package produced under this project are disseminated.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group (FCG) of the ASEAN-SEAFDEC Strategic Partnership (ASSP) Mechanism
Program Title:	Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty
Lead Country:	Thailand
Lead Department:	Training Department
Total Duration:	2004 – 2009

1. INTRODUCTION

The main objectives of the program are to achieve the community-based management for sustainable coastal fishery resources and to alleviate poverty in coastal communities, with particular emphasis on women's groups. As an implication of Locally Based Coastal Fishery Resource Management projects implemented in Thailand and Malaysia by the end of December 2004, it was confirmed that the capacity building of human resource should place greater emphasis on the progress to ensure the sustainable coastal resource management. The project deployed pragmatic activities to stimulate and encourage people's participation as well as to build people's capacity for involvement in coastal resource management and integrated community development. The people's participation is an initial empowerment to contribute to the institution of a local management body to vigorously lead community development and coastal resource management. The local management body takes the function of establishing local businesses to gradually create job opportunities both inside and outside the fisheries sectors of the community. In addition, the local management body also leads to encouragement of people's participation and creation of activities in resource management to strengthen people's awareness on managing resources at local level.

The proposed program has 3 main components. Component-1 plans to follow up and strengthen the activity on people's capacity building and participation in the two on-going projects under the TF-I; *i.e.* ICRM-PD (ex-project LBCFM-PD) in Thailand as a sub-component 1: Project 1 and ICRM-PL (the ex-project LBCRM-PL) as a sub-component 2: Project 2 as their 2nd phases. The former project activity and the impact were evaluated in 2004, and based upon the outcome of the evaluation the project action plan was reformulated as phase II to meet the new requirements for the follow-up stages of the basic project concept from 2005 under the financial arrangement of TF-IV. The main emphasis in the phase II ICRM-PD was placed on institutional and human capacity building in the core fishermen groups throughout the remaining project term, while the one in the 2nd phase of ICRM-PL has been put on human capacity building in the deployment of integrated coastal resources management centered on the demarcated zone for community fisheries to be established by DOF Malaysia. The project ICRM-PD had been achieving expected goals toward the end of 2006 as scheduled. The project was taken over by DOF Thailand from January 2007 for the three years tenure under the financial auspices by the Royal Project and year by year from Provincial and Tambon Organization Administration. The SEAFDEC/TD has been involved in this follow-up project as the capacity of an observer in a bid to ensure its sustainable execution of the project. Similarly, the project ICRM-PL was terminated in December 2007 in the wake of achieving expected outcomes although they suffered from the devastating tsunami assault in December 2004. Toward the end of project tenure, the project implementation committee was formulated in DOF Malaysia so as to ensure the continuation of the project activity. SEAFDEC/TD has been also continuing its minor follow-up activities to monitor the sound project progress since January 2008.

The Component 2 is the implementation stage of the component 1 concept for other Member Countries. Since the inception of the project operation of LBCFM-PD and LBCRM-PL in Thailand and Malaysia, respectively under TF-1, a few other Member Countries have proposed to

commence similar CBRM projects in their own countries within the collaboration framework with SEAFDEC/TD. In fact, four other Member Countries, *i.e.* Indonesia, Brunei Darussalam, Cambodia and Myanmar, had officially expressed their interest to initiate the similar projects under the collaborative project arrangement before 2004. Among these countries, Cambodia was selected as the 3rd country to start up the project operation. The document formulation for the similar project was completed for in Cambodia entitled “Integrated Coastal Resources Management in Sihanoukville (ICRM-SV)” in July 2005. But the arrangement for its initiation was delayed until November 2005 when the project formally commenced its activity as the 3rd sister project. The project has been progressing in the right track since then demonstrating measurable impacts to the fisheries communities, especially in promotion of local business and embodiment of the coastal resource management institution. The project was expected to terminate its operation in December 2008. Taking the current on-going activity into account and responding to the strong request by the Cambodian authorities, it was decided to further extend the project tenure up to December 2009 so as to ensure substantial project outputs.

As a Component 3, the regional training courses for fishery managers and extension officers were proposed. The roles of the fishery managers are provide information to decision maker on formulating and transforming policy into management plans. Extension officers are deal with communities in community development and CBRM. There are vital and the capacity building is urgently called for. More emphasis in this training courses are placed on problem-and-solution analysis and the practical application at the project site level, making best use of experiences and knowledge gained through the ongoing collaborative project operations.

2. PROGRAM

2.1. Component 1: Follow-up of the on-going projects

2.1.1. Project 1: Integrated Coastal Resources Management in Pathew District (ICRM-PD) = LBCFM-PD Phase II (Thailand)

2.1.1.1. Objectives

- 1) To develop capacity building of local human resource to empower the local people involved in vigorous community development to manage and sustain coastal resources;
- 2) To develop systematic voluntary participation from the local people in management of local body and to proactively strengthen community development and resource management; and
- 3) To encourage people’s participation in creating job opportunities and in establishing local businesses to increase accessible income source to alleviate poverty and to develop the economic base of the community.

2.1.1.2. Project description

The SEAFDEC’s Training Department and the Thai DOF agreed that the LBCFM-PD project phase II (2005-2006) as ICRM-PD would place greater emphasis on capacity building and participation of the local people in order to strengthen and lead existing activities resulted from the outcome of the project in phase I. The strengthening of people’s participation was carried out through training courses and extension programs with special topics needed such as group cooperative management, group book accounting, recording, keeping and management, profit distribution as well as allocating incentives to group members. These combined knowledge and skill can contribute to the local people in sustaining community activities and local businesses.

The original project framework envisaged that the newly created Tambon Organization Administration called “Ao.Bo.To.” was to take charge of the function of CBFMRM. But through two and a half years’ project operation it was found that this body was not a type of organization which could be involved in such a duty with interests. It was considered so critical thinking in terms of project effectiveness and sustainability that the project basic approach was rectified. In

2005 and 2006, the major project effort was centered at establishment of the fishermen's group as a core organization by building up their institutional, managerial and functional capacity. As the result, the Pakklong Fishermen's Group (PFG) consisted of seven sub-groups was established in March 2005 and it was further legally registered with the Provincial authorities concerned in December 2005. Since then, the PFG has been empowered to pursue various functions and activities with its own motivation, and it is very optimistic that it will further strengthen its institutional managerial capacity with continued support by the DOF of Thailand and close monitoring on its progress by SEAFDEC/TD.

It was envisaged from the outset that the SEAFDEC/TD's involvement in the project's physical operation would be gradually reduced over time; in the mean time the counterpart organization under the Thai DOF, *i.e.* Chumphon Marine Fisheries Research and Development Center (CMDEC), would take over the leading role of the project operation step by step. Toward the end of the project in 2006, it was further envisaged that the project management capacity should be transferred to the newly formed Pakklong Fishermen's Group (PFG). This arrangement is able to maintain the sustainable coastal resources for themselves and community development in the area with continued supports from relevant authorities like CMDEC, Chumphon Marine Coastal Resources Research Center (MCR), Chumphon Fisheries Office and other district and sub-district administration offices. This is the ultimate goal of the project

As such, SEAFDEC/TD has continued its involvement into the follow-up activity of the project operation since January 2007, especially in monitoring capacity embodiment of PFG.

2.1.1.3. Progress of activities in the year 2009

As aforementioned, the major activity in 2008 was the follow-up ones which monitored and supported the activities primarily deployed by DOF Thailand and various local administrative agencies along with the newly organized Pakklong Fishermen's Group.

Project/ Activity Title	Duration	Remarks
Activity 1: Follow-up activity		
- Meeting with CMDEC	1 day	Convened on August
- Participation to PFG Meeting	2 day	On March and August
- Monitoring crab bank activity	1 year	Progressed and continued
- Participation on mangrove reforestation with PFG	1 day	On August
- Publication of leaflet and progress report	2 month	July and August

2.1.1.4. Proposed future activities

In fact, the project was terminated in December 2006 as initially scheduled and the activity in 2010 is confined to just follow-up works as listed below.

Activity 1: Follow-up activity

- Participation to General meetings (if and when DOF organizes)
- Participation to the local seminar (if and when DOF organizes)
- Monitoring activities being carried out by PFG

2.1.2 Project 2: Integrated Coastal Resources Management in Pulau Langkawi (ICRM-PL) = LBCRM-PL Phase II (Malaysia)

2.1.2.1 Objectives

- 1) To develop capacity building in local human resources to empower the locals to manage and sustain coastal resources and vigorous community development;

- 2) To develop systematic voluntary participation of local people in local management body and to proactively strengthen community development and resource management; and
- 3) To encourage people's participation in creating job opportunities and in establishing local businesses to increase accessible of income source to alleviate poverty and to develop the economic scale of the community.

2.1.2.2. Project description

Toward the termination of the first phase of the project under the TF-1 in December 2004, the project ICRM-PL had been running very effectively in producing some tangible outputs until the day of 26 December 2004 when the devastating tsunami assaulted the project operational area, leaving very tragic damages behind. Most fishing boats and fishing gear were destroyed or lost, and the fish landing facilities were ruined. Many fishermen's houses collapsed. The Malaysian authorities together with NGOs and foreign aid organizations immediately started the rehabilitation of the tsunami stricken fisheries sector. Resulting from these efforts extensively exerted in 2005 and 2006 some fishing activities have more or less reactivated. This unexpected natural calamity caused major changes and delays of the project in approach and progress. The project work-plan in 2005 was revised drastically so as to meet the acute requirement of the fishing sector and the project tenure was extended for one more year until the end of 2007 to offset the retardation of planned activity. In 2006, some rehabilitation related activities were continued along with the development work originally envisaged. In 2007, the fishermen in the project operational area felt that the rehabilitation stage from tsunami disaster had been over. The project has resumed its development work as originally scheduled in the remaining tenure of the project in 2007. The involvement by SEAFDEC/TD to the project operation was terminated in December 2007 and the Project Implementation Committee was formed within the DOF Malaysia in a bid to continue the project operation. The SEAFDEC/TD continued minor follow-up activities to monitor its sustainable progress in 2009.

2.1.2.3. Progress

The project activity in 2009 is meant for just monitoring project progress and continuing a few minor outstanding activities like crab bank scheme, women's group activity and establishment of zoning demarcation and the promulgation of its fishery management plan. A core body, KPSP (Fishery Resources Management Community), was just established in place of KEN (Fishermen Economic Group) to pursue various fishery resources management activities and therefore continuing such follow-up activity is vital.

Project/ Activity Title	Duration	Remarks
Activity 1: Publication of reports - The regional seminar report is published		Completed
Activity 2: Follow-up activity - Monitoring the establishment of zoning demarcation and promulgation with DOF Malaysia and KPSP - Monitoring crab bank activity - Monitoring the women's group activity	1 day 1 year 1 year	On March Continued Continued

2.1.2.4. Proposed future activities

The involvement in the project operation by SEAFDEC/TD was withdrawn in December 2007 and the project operation itself has been continued by the DOF Malaysia. The SEAFDEC/TD has to still continue minor essential outstanding activities like local business development by the women's group and the crab bank scheme, and also participation in the General Meeting with KPSP. The necessary activities are as listed below.

Activity 1: Follow-up activity

- Monitoring crab bank activity
- Monitoring the accounting system of women's group activity
- Monitoring the establishment of zoning demarcation and promulgation

2.2. Component 2: Extension of the project concept to other Member Countries

2.2.1. Project 3: Integrated Coastal Resources Management in Sihanoukville (ICRM-SV) Cambodia

2.2.1.1. Objectives

- 1) To develop capacity in local human resources to empower the locals to manage and sustain coastal resources and vigorous community development
- 2) To develop systematic voluntary participation from the local people to manage the local body and to proactively strengthen community development and resource management
- 3) To encourage people's participation in creating job opportunities and in establishing local businesses to increase accessible of income source to alleviate poverty and to develop the economic scale of the community.

2.2.1.2. Project description

Prior to the official commencement of the project operation, the preliminary site survey was conducted in June 2004 and a suitable site for the CBRM project was identified in Sihanoukville among a few sites proposed by FiA Cambodia. The plan to initiate the project in Cambodia from 2005 was submitted to the 27th PCM and it was endorsed. The baseline socio-economic survey was conducted in early 2005, and based on the findings of which the project document was formulated and finalized in July 2005. However, the actual project commencement was delayed until November 2005, mainly due to the delayed administrative arrangement within the Steering Committee meeting's structure.

After commencement of the project operation in November 2005, the project coordinated with the Japanese Embassy in Cambodia to grant about USD 11,400 to construct facilities necessary for carrying out mud crab culturing within the project activity of local business development.

In 2007, the project has been progressing on the right track consistent with the project orientation, particularly in formulation of the fisheries management plan and related document consistent with the contents in the Decree and Sub-decree on community fishery resources management which were promulgated in 2005. The proposed Community Fisheries Area Management Plan (CFAMP) was approved together with other related documents by the authorities. Based on the legal entity endowed to the community fisheries, the project has just entered into the practical implementation stage in line with the provisions of CFAMP.

Under these circumstances, the Cambodian authorities considered the project extension for another year until the end of 2009 should be vital so as to maintain and further accelerate the current impetus of community based movement and the proposal for one-year extension was submitted to SEAFDEC. The proposal was basically agreed upon by the Japanese Trust Fund and the annual work plan has been prepared for the final endorsement. Then, the total project tenure would become 4 years and 2 months.

2.2.1.3. Progress

The major activity in 2009 focused on particularly in human and institutional capacity building with the community fisheries in the project operational area so as to strengthening the foundation

of the project framework, in consolidating mutual working relationships at provincial as well as district levels and encouraging all stakeholders to participate in project operations. The detailed project progress is dealt at length in the first and the second biannual project progress reports in 2009.

Project/Activity Title	Duration	Remarks
Activity 1: Baseline/ Monitoring survey - Continue regular fish landing data collection - Analysis and publish of data in 2008 - Monitoring socio-economic survey - Analysis and compilation of data - Analysis and compilation of data of marine biological survey on blood cockle	1 year 3 months 5 days 3 days 2 months	Continued Completed in April Completed in February Completed in October Completed in July
Activity 2: Encourage CBRM - Coordination in promulgation of the Community Fisheries Area Agreement (CFAA) along with CFAMP, BL, IL and MCFA - Practical application of CFAMP in close consultation with CFCC - Strengthening the capacity and capability of local enforcement activity - Conduct a workshop from 4 neighboring villages to explain the regulations of fish <i>refugia</i> .	1 year 1 year 1 year 4 days	The map of CFAMP is still awaiting the endorsement of the Inspectorate for submission to the Governor of Sihanoukville Province. Continued Continued Completed in February
Activity 3: Promotion of local business - Monitoring mushroom production and spore with emphasis on commercially viable management - Identify and initiate other potential local businesses - Continuation of mud-crab culturing with emphasis on commercially viable management - Continuation of sea bass culturing in cage and mud crab ponds	1 year 1 year 1 year 1 year	Continued. Mushroom Producers Group was established. Under trial. The 4 th trial was failed and the 5 th one is under way. The 1 st and 2 nd trials in sea-bass cage culture is completed and culture in pond is under way.
Activity 4: Enhancement in HRC and participation - Meeting with Community Fisheries Prey Nup II - Conducting various fishermen's workshop aimed at increasing awareness on implementation of CFAMP - Conducting various training courses and study tours - Identify and implement relevant volunteer works for community development and environmental improvement - Publication of reports and manuals and PR materials	1 day 1 year 1 year 1 year 1 year	Completed in February Continued Continued Continued Continued

Activity 5: Rehabilitation and Resources enhancement - Establish and manage fish refugia - Establish and manage Crab Bank - Mangrove reforestation	1 year 1 year 1 year	Fish refugia began with blood cockle. Crab bank scheme commenced. Continued. To be implemented in December in association with schools.
Activity 6: Project management meetings - The Steering Committee (SC) meeting is held once a year. - The project Implementation Coordination Committee (ICC) meetings are summoned once every 4 months.	1 day 1 day	The 5 th SC meeting was convened in March. The 8 th ICC meeting was held in June. The 9 th ICC will be in November.
Activity 7: Project evaluation - Project evaluation is taken place - Publication of the project evaluation report	1 months 2 months	Completed in August Completed in November
Activity 8: Regional seminar - Organize and conduct the regional seminar on the impact of ICRM-SV - Publication of the seminar proceedings	3 days 2 months	Postponed to January 2010 Postponed to March 2010

2.2.1.4. Proposed future activity

The project would be terminated in December 2009 and it was agreed that the project operation would be continued by FiA from 2010 onward. The phasing-out process by the SEAFDEC/TD component should be proceeded accordingly throughout the project operation in 2010

Activity 1: Publication of reports

- Publication of the proceedings of the Regional Seminar

Activity 2: Follow-up activity

- Participations in ICC meetings
- Participation in the local seminars and workshops organized by FiA Cambodia
- Monitoring crab bank activity
- Monitoring the accounting system of women's group activity
- Monitoring the mud crab culture and sea bass culture

2.3. Component 3: International Training Courses on Coastal Fisheries Management for Fishery Managers and fisheries extension officers

Courses Arrangement

2.3.1. Objectives

- 1) To extend the knowledge, skills and attitude of coastal fisheries managers at the central level and fishery officers at field level in the concept of sustainable coastal resources utilization and management; and
- 2) To introduce and share knowledge/experience of SEAFDEC with collaboration of national DOF pilot projects in ICRM-PD, ICRM-PL and ICRM-SV in Thailand Malaysia and Cambodia respectively and other Coastal fishery management projects which are organized by DOF sectors and other fishery agencies, to the region.

2.3.2. Project description

Referring to the Millennium Conference “Fish for the people” organized by SEAFDEC in 2001, addressed the issue and confirmed the emerging co-management concept for fisheries as the new policy thrust for the region. Establishing such co-management systems and making them functional requires capacity building efforts for all key players, to take up their respective responsibilities under such systems. In regarding to this TD has been conducted the two regional training courses in order to build up capacity efforts for all key players: 1) The international training course on coastal fisheries management for fishery managers, this course focus on sharing experiences and lessons from various pilots projects in co-management for policy formulation and designing fishery management plans addressing locally specific management needs. and 2) The international training course on coastal fisheries management and extension methodology, this course designed to familiarize the participants with co-management principles for small scale fisheries and the necessary extension skills for establishing and supporting participatory fisheries mixture of lectures, innovative classroom activities, and extensive field practices that promote active learning, the participants learn to first understand the need for the local level participatory fisheries management approaches. Then they are familiarized with approaches and tool as that can help them facilitate community and stakeholder dialogues for analyzing local resource use patterns and livelihood issues and for formulating solutions for these issues.

2.3.3. Progress

In order to continue in transferring knowledge to SEAFDEC Member Countries and interested people. In May, the Training Courses on Coastal Fisheries Management for Fishery Managers was conducted and the International Training Course on Coastal Fisheries Management and Extension Methodologies will be conducted in November, the course progress/activities in detail are as follows.

The International training course on Coastal Fisheries Management for Fishery Managers

The course was conducted from 25th May –3th June 2008. There were 10 participants from SEAFDEC-Trust Fund fellowships (Brunei Darussalam, Cambodia, Indonesia, Japan, Laos, Myanmar, the Philippines, Thailand and Vietnam) and 3 participants IFAD/Sri-Lanka sponsor, so in totally we have 13 participants attended this training course. This course aimed to assist the Managers to practice in acquiring and analyzing information from several pilot projects in coastal fisheries management for Policy formulation, and to design coastal fishery management plans that suit their local conditions. The Training was composed of two main parts; there was a part for lectures and another part for pilot project introduction including field trips on Integrated Coastal Resource Management in Chumphon Province, During the lecture session, participants refreshed their knowledge on Responsible Fisheries Aspects in Southeast Asia, a Characteristic of Coastal Fisheries Resource and Management, the Right-based and Co-management systems in Japan. For the session on pilot projects introduction and field trips, the participants were introduced to the background and some other important information of each pilot project, the visits to the pilot projects were made after that. Participants took chance to interview and discussed with resource users as well as to observe closely on each activities. At the end of the course, participants were asked to evaluate on the training course. It was recorded that the knowledge and experience which they have gained will be useful and applicable for their work/project when they return back to their home countries.

International Training Course in Coastal Fisheries Management and Extension Methodology

The course will be conducted on 24th November to 17th December 2009. There will be about 11 participants from SEAFDEC-Trust Fund fellowships (Brunei Darussalam, Cambodia, Indonesia

Japan, Laos, the Philippines, Thailand and Vietnam) there will be also 4 participants from IFAD/Sri-Lanka project fellowship and 2 Participants from Maldives Fisheries Training Center, Ministry of Fisheries and Agriculture, so there will be about 17 participants attend on this training course. The course focuses on modern principles and concepts of coastal fisheries and resources management; The need to change fisheries management towards co-management, involving local communities and applying eco-system principles to fisheries management; The MCS approaches as a tool for coastal fisheries management; Small-scale fishery problems and constraints; Facilitation, mediation and conflict resolution skills, Extension concepts, methodologies and implementation; Study/field trips to fishing villages; Practical involvement and presentation of extension media. During field trip to fishing villages in Chumporn province participants will practice to do research for extension work in gathering the ground situation and present problems from the communities which leading directly to the problem solving. Furthermore participants will be able to produce their own extension media by applied all knowledge they have gained from the course to produce it as the drama and/or documentary video.

Project/ Activity Title	Duration	Remarks
Activity 1: International Training Course on Coastal Fisheries Management for Fishery Managers		Completed
Activity 2: International Training Course on Coastal Fisheries Management and Extension Methodologies	24 days (24 Nov -17 Dec 2009)	Will be completed in December 2009.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Fisheries Resource Survey and Operational Plan for MV SEAFDEC2
Lead Department: Training Department
Duration: 2010 (SEAFDEC fiscal year)

1. INTRODUCTION

With the support of the Government of Japan, a new Fisheries Research and Training Vessel, the MV SEAFDEC 2 was provided to SEAFDEC Training Department (TD) in 2004. Fisheries resources (*e.g.* fishing trial and hydro-acoustic survey) and oceanographic surveys have been conducted in the water of Member Countries in collaboration with and based on their request through the utilization program of using MV SEAFDEC2. Over the years, more than 30 cruises have been carried out by MV SEAFDEC2. Regarding the operational cost of using MV SEAFDEC until 2009 for national research surveys was based on a cost-sharing policy using the budget from SEAFDEC's Minimum Regular Contribution and the Member Countries, as adopted at the 37th Meeting of the Council of SEAFDEC in 2005.

Due to the globally increased oil price starting from the year 2006, consequently in early the year 2009 this issue was discussed during the 40th Meeting of SEAFDEC Council. The Council agreed that the countries that gain the benefit from the use of MV SEAFDEC2 should be responsible for the cost incurred by the vessel. It is therefore agreed on a modified cost-sharing policy/scheme that supply of the fuel for the entire duration of the research including the cruising to and back to the requesting country; and this scheme will be effective starting from the year 2010.

2. PROGRAM

2.1 Objective

- 1) To assist Member Countries in conducting research surveys on fisheries resources (*i.e.* fishing trial and demonstration, ecosystem, and hydro-acoustic surveys), oceanographic surveys, fish preservation, fish sampling and its identification, etc;
- 2) To assist Member Countries in building human resource capacity during the cruise survey onboard MV SEAFDEC2 based upon the request from the requesting countries; and
- 3) To facilitate a new fishing ground establishment for the region (*e.g.* deep-sea fisheries, un-trawlable area, etc.)

2.2 Program Description

To accomplish key activities as mentioned above, TD works in close collaboration with the Member Countries and other key partners at both national and regional levels. Over the years, The MV SEAFDEC2 has been used to assess the utilization of fishery resources. The vessel will also be used to implement fishery training programs for resource management and fisheries personnel. In a broader sense, the acquisition of MV SEAFDEC2 will help strengthen technical cooperation and effective fisheries and environmental management in the ASEAN region through the enhancement of research and training capability.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Activity Title	Duration and Area of Operation	Collaborative Partners	Remarks
Fishing and Hydro-biological Survey in the Deep Waters of Brunei Darussalam	6Mar -11Apr Waters of Brunei Darussalam	Department of Fisheries, Brunei Darussalam	100% Completed 1. Acoustic survey: 32 stations 2. Oceanographic survey: 34 stations including collection of plankton and sediment 3. Demersal fish sampling by bottom trawl in Zone 3 (>80m deep), 18 stations 4. Large pelagic fishing trial using pelagic longline in Zone 4, 5 operations/stations.
Fisheries Resources Survey	23Apr - 22May Bitung, Indonesia	RIMF/AMFR/MMAF of Indonesia	100% Completed 1. Acoustic survey: 913 nm, speed 7 knots by FQ 80 2. Oceanographic survey: 19 stations (ICTD, Bongo net, Newston net, Temperature-depth Sensor, Current Indicator, weather information collection, and IKMT 3. Cetacean sighting program during the cruising

4. PROPOSED Future ACTIVITIES FOR THE YEAR 2010

4.1 Planning of Activities

Project/Activity Title	Duration	Remarks
<p>Fishing and Hydro-biological Survey in the Deep Waters of Brunei Darussalam</p> <p>To conduct hydro-biological and fishing survey along the deep waters within Zone 3 and 4 of Brunei Darussalam and assess the status of the marine resources in the study area.</p> <p>The specific objective of the program activities includes: (i) to determine the status of the fisheries resources along the deep water of EEZ within water depths ranging from 200-300 meters using trawls (otter-board and beam) and tuna longline and to determine the health of its environment; (ii) to assess the fish biomass in the study area using hydro-acoustic techniques; (iii) to determine the overall health of the marine environment by performing the oceanographic survey; (iv) to determine the species composition of fishes in the mid-water layer or status of Zone 4; and (v) to determine the spatial and seasonal distribution of the nekton and plankton as well as the environmental changes during the sampling periods.</p>	Sept	
<p>Study on Demersal Fisheries Resources in Malaysian Deep-sea Waters</p> <p><i>Study area:</i> Sarawak waters, West Sabah and Labuan coastal waters, East Sabah coastal waters</p> <p><i>Activities:</i> to conduct the resources survey by using: (i) bottom trawl at depth ranging from 200-500 meters; (ii) bottom trawl at depth > 500 meters; and (iii) traps and vertical longlines in un-trawlable areas at depth > 200 meters.</p>	Jun – Aug (60 days)	



4.2 Expected Outcomes

- 1) A preliminary finding for overall health of the marine environment, including fisheries resources, in the deep waters of Brunei Darussalam, particularly on the area of Zone 3 and 4; and
- 2) A report of the study on the demersal fisheries resources in the east Malaysian waters, including Sarawak waters, West Sabah and Labuan coastal waters, East Sabah coastal waters.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Deep-sea Fisheries Resources Exploration in the Southeast Asian Waters
Lead Department: Training Department
Duration: 2007-2011

1. INTRODUCTION

Due to the depletion of the inshore/costal fisheries resources in the Southeast Asian (SEA) Countries, in conjunction with the fuel crisis that make many fishers suffering, some fishers have to stop their operation and change to other business. In other hand this automatically reduces the fishing capacity in the sense, goes in line with national fishery policies in many countries. However, this depletion also reduce the supply of seafood materials to many fish processing industries in the region and will also reduce the food supply to the global market in the near future. In the point of view of fishery policy maker or government, searching of new fishing ground is one of the important research works under the national program and to important this research work it is very much needs to get fully support in both funding and capacity building from government.

Considering the geographic features in the SEA waters, more than 50% of the sea areas are identified as deep-sea whereas utilization of those resources have not been initiated yet. This is due to the lack of information on the species composition and how potential of the resources. In addition, it is clear that research vessels for deep-sea survey seem to be one of the main factors that many countries in the region are facing with. There are not many research scientific instruments, type of fishing gears for fish samplings, and expertise. To encourage members to initiate the deep-sea resources exploration, therefore, modification of sampling gears for those research vessels is essential.

In the point of view of the international concerns on the ecosystem approach for the deep-sea fisheries, to provide better understanding o the Member Countries on the deep-sea issues in the international forum therefore exploration of the deep-sea resources through this program are needed for further consideration and sustainable management.

2. PROGRAM

2.1 Objectives

- 1) To investigate the deep-sea fisheries resources in collaboration with the SEAFDEC Member Countries through using of MV SEAFDEC2 and under the cost-sharing policy and/or by the national research vessels;
- 2) To search for new deep-sea fisheries resources and fishing grounds in the SEA;
- 3) To investigate the impact of deep-sea trawl to the bottom ecosystem through the identification of species composition and underwater observation via VDO camera;
- 4) To enhance human resource capacity on the deep-sea resources exploration such as on the methodology for samplings of deep-sea fisheries resources, identification of deep-sea fishes and larval fishers: taxonomy and development of appropriate/responsible fishing gear and methods for harvesting/samplings of deep-sea resources; and
- 5) To support the national resources survey using national research vessel by advice Member Countries on the improving of fishing gear and methods for deep-sea fish samplings

2.2 Program description

There are two main subjects under the deep-sea exploration program as follow:

- 1) Data/information collection on the deep-sea fisheries resources in the SEA region through the reviewing of the existing data and actual exploration by SEAFDEC research vessel and national research vessel in cooperation with the Member Countries; and
- 2) Investigate/survey on the impact of trawl fisheries to deep-sea ecosystem through the actual survey. Onboard training program on this subject will be also conducted in order to encourage the Member Countries on the deep-sea exploration and study on the deep-sea ecosystem.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
1) Supporting of Deep-sea Fisheries Resources Survey	Mar to Apr	90% Completed Technical consultation visit to Brunei for collaborative program arrangement on the deep-sea surveys has conducted. SEAFDEC/TD supported technical staff to joint research survey in deep-sea area of EEZ of Brunei. Technical report of the survey in Brunei will be completed.
2) Deep-sea Ecosystem and Impact from Fisheries	Jan to Dec	80 % Completed Information collection through: actual survey on deep-sea ecosystem and impact from fishing; study on the impact of fishery to deep-sea ecosystem by conducting deep-sea monitoring program; and review work on deep-sea fishery resources survey and taxonomy in the Southeast Asian region; has been carried out. In addition, a preliminary report on fishery biology of the deep-sea resources from existing information of actual survey since 2008 to date is planned to be produced and published.
3) Development and Improvement of the Deep-sea Fish Sampling Gears/Technology	May	100% Completed Regional Workshop on SOP of the methodologies for the deep-sea fishery exploration and development/improvement on appropriate sampling techniques was organized. During this Workshop
4) HRD Programs on Deep-sea Research and Sampling/Eco-system	Jun to Dec	30% Completed Preparation of the organization of the Regional Workshop on Identification of Deep-sea Fish has been conducted. The Workshop is scheduled in early 2010. It was envisaged that human resource capacity on deep-sea fish identification will be built for the regional scientist in the region.
5) Information dissemination	Jun to Dec	70% Completed Publication of the report of the regional workshop on SOP will be disseminated to the Member Countries and other relevant agencies. Field book and poster of the deep-sea fish has produced. A regional network for deep-sea fisheries was established through coordination and collaboration with relevant initiatives.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

Project/Activity Title	Duration
<p>Activity 1: Supporting of Deep-sea Fisheries Resources Survey Technical consultation with the Member Countries for collaboration arrangement for the deep-sea resources survey/exploration by using SEAFDEC's research vessels or others will be made. Also, SEAFDEC supports technical staff to join their deep-sea resources survey.</p>	Jan to Dec
<p>Activity 2: Deep-sea Eco-system and Impact from Fisheries Information collection on the impact from fishing to deep-sea ecosystem through the organization of the expert meeting on deep-sea fishing and its impact to marine environment.</p>	July
<p>Activity 3: Development and Improvement of Deep-sea Fish Sampling Gears/Technology Improvement of the deep-sea sampling gears will be carried out through technical exchange among experts and fishing gear technologist. This supports particularly to the deep-sea resources survey in Member Countries.</p>	Jan to Dec
<p>Activity 4: HRD Programs on Deep-sea Research and Sampling/Eco-system Technical consultation to Member Countries for formulation and development of HRD programs to support deep-sea fisheries resources exploration for SEA waters is in the plan. The program activity also include enhance capacity of SEAFDEC staff on the deep-sea resources exploration.</p>	Jan to Dec
<p>Activity 5: Information Dissemination Publication of the report on the expert meeting mentioned above, set of references and documents collected through the project implementation will be produced. Data and information exchange will also be carried out through appropriate mechanism and existing system.</p>	July to Dec

4.2 Expected Outcomes

- 1) Investigation of the deep-sea fisheries resources in close collaboration with the SEAFDEC Member Countries by using M.V. SEAFDEC2 and/or by other research vessel;
- 2) Exploration of a new deep-sea fisheries resources and its fishing ground in the SEA waters;
- 3) Investigation of the deep-sea trawling impacts on sea-bottom ecosystem through the identification of species composition and underwater observation using VDO camera, etc;
- 4) Enhance human resource capacity on the deep-sea resources exploration such as sampling methodology for the deep-sea fisheries resources, identification of the deep-sea fishers and larval fishers, taxonomy, and development of appropriate/responsible fishing gear and methods for harvesting/sampling of the deep-sea resources; and
- 5) Support the national resource survey using national research vessel of the Member Countries for improvement of fishing gear and methods for deep sea fish samplings.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Development of Regional Database for Fishery Management
Lead Department: Training Department
Total Duration: 2008-2012

1. INTRODUCTION

One of the major problems in regional information collection and management of fishery information/data is the available of data management system/database at the national level. SEAFDEC, based on the national data input, has faced many problems in delayed publishing of the regional fisheries statistics long time ago. For example, SEAFDEC has published information were in hard copies format and always delay for 2-4 years. In addition, to use and apply that information the user generally need to reanalyze from the electronic data format. This problem may not occur and waste time of users, if the fishery database is available.

So far, not many Member Countries have developed and utilized their own fisheries database system, in contrast many countries still use to collect data in the electronic worksheet or hard copies. For the later methods, it can reduce opportunity to get the evaluation of annually fishery status within short time compare to those who use fishery database.

To make use of the regional database efficiently and very useful for users in the region and global level, standardization of the data and information from national fisheries data input are need. Appropriate fishery database systems which can be also utilized by the Member Countries, and can automatically generate the general outcome/report are very much required.

Under the Trust Fund 2 on information collection for sustainable small pelagic fisheries in the South China Sea, TD in collaboration with the MFRDMD has initiated development of the regional database to support the data collection of both landing and biological data. The database system could generate the catch landing by areas, period of times, and by species. In addition, from the biological data input, the system could also generate some results of biological parameters. The system was developed for online data input; only the user of the participating Member Countries can access the system through name account and password. Before the terminal the project, in order to support the Member Countries to continue their works by utilizing the database, therefore TD has further developed the software of database system based on the regional version. This database software will include all pelagic species and landing sites up to the users' need. TD had released the 1st version of software by 2007.

With regards to the fishery statistical system, TD has initiated development of the system based on the fisheries statistical bulletin for the South China Sea since 2006 in order to use the regional information collected from the Member Countries. However, the system is not complete yet due to changing of the original worksheet and standardization of data.

2. PROGRAM

2.1 Objectives

- 1) To further develop/upgrade and promote the regional database of the pelagic in the Southeast Asian Waters based on the actual survey and landing site collection based on the studied outcomes;
- 2) To develop regional fisheries statistics database in the Southeast Asian region;

- 3) To enhance human resources capacity in using of the regional database for fishery management through various training program/activity; and
- 4) To support less developed countries on the use of fisheries statistical database.

2.2 Program description

One of the best fisheries management tools is to have their own database management system in data collection whether fishery statistics system and database for actual fishing activity. In the project make sure of our expertise by developing the regional database and introduce to the Member Countries especially less developed countries will be implemented. This will facilitate the present and future data collection in long-term. In addition, the project will also focus on the database for tagging programs under 'tagging program for economically important species' in the SCS and Andaman Sea managed by MFRDMD in collaboration with TD.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
1. Develop and Maintain Regional Database	Jan – Dec	90% Completed Tagging database was continually developed and maintained. The support to the Regional Fisheries Statistics project was also continued. In addition, the trial phase in developing and setup fishing ground information system has initiated.
2. Build Human Capacity for Utilization of the Databases	Jan – Dec	100% Completed Onsite training on the use of database for pelagic resources to analyze fish landing data was conducted.
3. Collaboration with other Relevant Initiatives, Organizations, and Partners	Jun – Dec	100% Completed Communication with other relevant initiatives, organizations for the technical and information exchange was made.
4. Information Dissemination	Jun – Dec	100% Completed Media for information exchange was produced and disseminated.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

Project/Activity Title	Duration
<p>Activity 1: Development and Maintain Regional Database for Fisheries Management</p> <p>The project will continue to improve the database for Member Countries, in particular to less developed countries, based on data collected from various sources including actual surveys, catch landing, and from other available information. In response to the request from the Member Countries on medium- and long-term use of fishery statistics and database initiated by SEAFDEC. The Regional Fishery Statistics and Fishery Information System in Southeast Asia Countries will be continuously improved. The activity also includes the support on improvement of the database of tagging program on economically important pelagic species; and development of database for vessels registration/licensing program (implementing by MFRDMD and SEAFDEC-Sida Program, respectively).</p> <ul style="list-style-type: none"> - Continue to develop and maintain the regional fisheries database. Improve fishing ground information system for pelagic fish (continuation of the trial phase). 	Jan – Dec

<p>Activities 2: Build Human Resources Capacity for Utilization of the Databases</p> <p>With the aim to utilize the fishery statistics and database, the continued support to the less developed countries in the region in terms of human resources capacity building will be conducted. Main activity under this category includes capacity building program to support the regional fishery statistics and databases for economically important pelagic species. In addition, formulation and development of the national HRD program on the use of database will also be provided based upon the request from Member Countries. Information package (<i>i.e.</i> promotion of the database software, guidelines, handbooks, etc) will be continued to develop in order to support the Member Countries on the use of fishery databases and information system.</p> <ul style="list-style-type: none"> - Participation in the 3rd Core Expert Meeting for Tagging Program 	Feb
<p>Activity 3: Collaboration with other Relevant Initiatives, Organizations, and Partners</p> <p>Collaboration with other relevant initiatives, organizations, and partners, in particular to the promotion on the use of fishery statistics/database and information will be the major activity under this category. This aims to: (i) promote/facilitate technical cooperation, (ii) promote/facilitate exchange of information among the Member Countries, and (iii) support the establishment of the clearinghouse¹ to facilitate transfer of information/technology and technical cooperation among Member Countries and other relevant initiatives. Activity under this program in 2010 also includes organization of a meeting/workshop or consultation visit for discussion with other relevant initiatives.</p> <ul style="list-style-type: none"> - Dissemination of information package to database through participation of the project staff to relevant meetings/events. Keep updates and communicate with other relevant initiatives for technical and information exchange for improvement of fisheries information and database system in the region. 	Jan – Dec
<p>Activity 4: Information Dissemination</p> <p>The developed fisheries databases, information system/services will be provided to the Member Countries through various ways, such as internet online services, information/training packages, brochures, booklets, CDs/DVDs, participation of the staff to the meeting/event organized by other relevant initiatives.</p> <ul style="list-style-type: none"> - Produce media for information exchange and dissemination. 	Jan – Dec

4.2 Expected Outcomes

- 1) Regional database on fisheries resources in South China Sea and Andaman Sea developed, using data collected from actual surveys, fish landing site, and review on available information;
- 2) Database services in order to support data analysis of the tagging other relevant programs
 - a. developed and maintained;
- 3) Fishing ground information system for sustainable management of pelagic fishery resources in the Southeast Asian region developed; and
- 4) Human capacity of the Member Countries particularly the less developed countries in using the regional fisheries statistics and databases enhanced.

PROGRAM DOCUMENT

Program Category:	Programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management
Lead Department	Training Department
Lead Country	SEAFDEC Member Countries
Total Duration:	2008-2011

1. INTRODUCTION

This project addresses the importance and need in strengthening management for small-scale fisheries. It is envisaged that the regional guidelines formed the basis to clarify strategies for the purpose. The project will tackle a number of issues that are mainly the capacity building for management of small-scale fisheries including the application of right-based fisheries and co-management to stop “Open Access” in the coastal fisheries and introduce “Regulated Entry System” using the system regionally developed as “the Co-management Using Group User Rights for Small-scale Fisheries”.

In the end of the year 2005 “The Regional Guidelines for Co-management Using Group User Rights for Small-scale Fisheries in the Southeast Asia” were developed through a series of the regional consultations. Some countries including Cambodia, Lao PDR, Thailand and Vietnam have initiated some improvements including the legal framework and the national policy frameworks of coastal fisheries either through SEAFDEC or by their own efforts. The introduction of rights –based fisheries to coastal small scale fisheries has been increasingly recognized in various technical and policy gathering to overcome the problems of overcapacity and IUU.

An applicable and proper practice of co-management using group user right will ensure sustainable coastal fisheries management and the stability of food security and livelihood to small-scale fisheries at the regional level. In particular, the practical application in such an approach has been demonstrated in Thailand, Malaysia and Cambodia as case studies under the collaborative arrangement with participated Member Countries and Vietnam for the nationalization of the regional guidelines and by the assistance through Japanese Trust fund. Efforts have also been exerted in human capacity building in this domain through short term regional training courses conducted by TD.

2. PROGRAM

2.1 Objectives

- 1) To promote the practice of rights-based fisheries and co-management to improve coastal fisheries management in each ASEAN Member Countries;
- 2) To strengthen a fishing community organization and its institution to take leading role in practicing rights-based fisheries and co-management for achieving coastal fisheries management;
- 3) To monitor the practice of rights-based fisheries and co-management for coastal fisheries management at all level concerned in ASEAN Member Countries ;
- 4) To apply the use of indicators as tool to promote participatory mechanism of co-management for coastal fisheries management;
- 5) To build and enhance human resource capacity to encourage participatory mechanism of co-management for coastal fisheries management; and

- 6) To foster a practice of participatory mechanism of co-management for coastal fisheries management in the ASEAN region.

2.2 Program description

The program has been progressive from year 2008 to promote an application and practice of the regional guidelines for co-management using group user rights for small-scale fisheries in Southeast Asia. Two main strategies are institutional building and participatory mechanism taken an emphasis to encourage the program implementation. The institutional building with concept and application of co-management and right-based fisheries is strengthening small-scale fisheries to secure their means of livelihood and food security in Southeast Asia. The institutional building is to gather all stakeholders to construct an enabling environment of sharing power, responsibility and function for fisheries management. All stakeholders exercise participating in decision-making process to formulate and regulate function, responsibility and authority for fisheries management through training workshop. The knowledge gained from the training workshop will be useful to encourage stakeholders to apply the concept of co-management and rights-based fisheries which relies on their national fisheries legal framework to promote coastal fisheries management. Other strategy is participatory mechanism of co-management highlighted to promote the regional guidelines on the use of indicators for the sustainable development and management of capture fisheries in Southeast Asia. The appropriate participatory mechanism of co-management fosters interested parties participate in making decision process to either select best available information or adapt policies and management framework to obtain more responsible and sustainable future condition of fisheries resources. Other strategy is regional technical consultation (RTC) as special activity for receiving synthesis information concerned to fisheries co-management function in right-based fisheries management and use of indicator for small-scale fisheries management. An output of the RTC serves to organize SEAFDEC Conference in year 2011.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Activity 1-1: Regional Training Course on Rights-based Fisheries and Co-management for Small-scale fisheries and Management

Guideline for Co-management Using Group User Right for Small-scale fisheries in Southeast Asia will be used as reference to prepare a syllabus of the course. Regarding the recommendation gained from the First RTC implemented in April 2008, ratio of lecture and study trip should be equal. This is to provide opportunity for participants of ASEAN-SEAFDEC Member Countries to concretely comprehend on the practice of the co-management and right-based fisheries for coastal fisheries management.

Activity 1-2: Training Workshop on Co-management, Rights-based Fisheries for Small-scale Fisheries at the national level.

The training workshop will be organized for fisheries officers, fisheries policy maker or people who work in the coastal small-scale fisheries sector. The content of the workshop will be based on the right-based and co-management in fisheries which based on the “SEAFDEC Regional Guidelines for Co-management Using Group User Rights for Small-scale Fisheries in Southeast Asia” and accommodate their fisheries management experiences and current situation. The training objective is to promote and provide information of the rights-based and co-management for small-scale fisheries management at the national level then fisheries co-management will be defined as a strategic approach to achieve a development of the fisheries sector in the interested country.

Activity 2-1: Regional Workshop on institutional design of co-management for promotion of using indicators and participation

Regional Workshop on institutional design of co-management for promotion of using indicators and participation. Regarding the outcome of regional workshop the Implication of Indicators Using for Coastal Fisheries Management in ASEAN Region in July 2008, the institution design of co-management for promotion of using indicators and participation has been drafted. Then, the workshop will be conducted on-site for genuinely practice with local user group and stakeholder concerned. This workshop help increase concrete experience to participant to promote co-management with using indicators and participation for coastal fisheries management.

Activity 2-2: Contribute Member Countries to develop its own national guideline

The component is to contribute all Member Countries to provide the national guideline of indicators use and the orientation of national guideline practice based on each country interest. Furthermore, the component also encourages country member to establish participatory mechanism and institution. Member countries can make request at regional seminar to prioritize country ordinal rank for component and activities implementation. This will mainly consider on the readiness of Member Countries.

The 1st National Workshop on Guideline and Standard Method of data Collection and Indicator were conducted in Myanmar during 25-29 August 2009. The workshop had set up process of progressive practice of log sheets in field trip to recognize problems; constraints and seeking a proper and more applicable ways to develop the log sheets. The result of the practice will be an input of the conclusive workshop in the second week of December, 2009. In this connection, the workshop also agreed to organize working group for undertaking the task with the official and stakeholders of department of fisheries, fishing companies, Myanmar Fisheries Federation, and local management authorities.

Project/Activity Title	Duration	Remarks
Activity 1-1: Regional Training Course on Rights-based Fisheries and Co-management for Small-scale fisheries and Management	26 Oct. - 4 Nov.	Ten participants from Brunei, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, Vietnam,
Activity 1-2: Training Workshop on Co-management, Rights-based Fisheries for Small-scale Fisheries at the national level.	-	Under preparation with host county
Activity 2-1: Regional Workshop on institutional design of co-management for promotion of using indicators and participation	5-7 Nov.	Twelve participants from Brunei, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, Vietnam
Activity 2-2: Contribute Member Countries to develop its own national guideline	25-29 Aug. and 7-11 Dec.	The workshop were conducted in Myanmar

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

Activity 1: Regional Technical Consultation on Fisheries Co-management functioning in rights-based fisheries management and use of indicator for small-scale fisheries management

SEAFDEC has implemented various programs to promote a focus of fish food security covering social, economic, responsible fisheries and friendly environmental aspects since year 2001. Capacity building of resource users and stakeholder and institutionalization is applicable to the rationale of fish food security and sustainability. The regional guidelines for co-management using group user rights for small-scale fisheries in Southeast Asia year 2003 has been issued to encourage the promotion of capacity building of resource users, stakeholder and institutionalization towards regional training program and workshop handled by SEAFDEC-TD. There are different levels of capacity building of resource users and stakeholder and institutionalization varied from country to country like some could apply and manage well resource user management body or organization; some just newly introduced or established.

Regional Technical Consultation on fisheries co-management functioning in rights-based fisheries management and use of indicator for small-scale fisheries management is a proper stage to follow-up and share information concerning implications; outcomes, beneficiaries and constraints of promoting fisheries co-management, rights-based fisheries management including these key approaches encourage a use of indicator for small-scale fisheries management. The output of RTC is a form of discussing results and synthesis of common issues in promoting fisheries co-management, rights-based fisheries management and a use of indicator that is an application of strengthening and improving resource user management body and institution for better and more suited to safeguard fisheries resource use for sustainability.

Activity 2: Regional Training Course on Rights-based fisheries and Co-management for coastal fisheries management

This international training course will be organized at the Training Department and focuses to assist Member Countries on capacity building of fisheries officers and fisheries policy makers. The course aims to extend the knowledge and skill on coastal fisheries management concept, participatory, co-management approach through rights-based fisheries management and conflict resolution skill in fishery resource management. Some case study and pilot project of SEAFDEC/TD will be used as a study site for the course work and discussion and also including participatory research method.

Activity 3: Regional Training Course on Coastal Fisheries Management and Extension Methodology

This regional training course focuses on principles and concepts of coastal fisheries and resources management. The need to change fisheries management towards co-management is involving local communities and applying eco-system principles to fisheries management. The course content composes of three main components; there are 1) The innovative approaches to Coastal fisheries management, 2) Essential skill for small-scale and coastal fisheries management, and 3) Communication and Media production.

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
1. Regional Technical Consultation on Fisheries Co-management functioning in rights-based fisheries management and use of indicator for small-scale fisheries management	August	
2. Regional Training Course on Rights-based fisheries and Co-management for coastal fisheries management	October	
3. Regional Training Course on Coastal Fisheries Management and Extension Methodology	September	

4.2 Expected Outcomes

- 1) To promote the applicable practice of rights-based fisheries and co-management towards institutional building of stakeholders for coastal fisheries management; and
- 2) To introduce the appropriate participatory mechanism of co-management to foster the use of indicator for coastal fisheries management.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement
Lead Country	Thailand
Lead Department	Training Department
Total Duration:	2010 – 2014

1. INTRODUCTION

The quality of coastal and inshore ecosystems has deteriorated significantly as a result of continued and increasing human activities. These areas are critical to a broad range of aquatic organisms during their life cycles including spawning, nursery areas and feeding zones and many of these species are of economic importance. The areas serve as important sources of recruitment to, and the sustainability of, commercial fisheries. It is suggested that the productivity of these ecosystems can be enhanced through human intervention leading to improved livelihoods for coastal communities.

In many areas, the introduction of man-made structures, including artificial reefs, aquaculture facilities, breakwaters, stationary nets and jetties are shown to enhance local populations of aquatic organisms, provided that there are sufficient numbers of structures to have a significant and positive impact on ecosystem productivity and that they are integrated into coastal zone management regimes. These structures can enhance fisheries resources. To optimize the results of such initiatives, careful impact assessment and planning procedures are required.

Re-stocking may be an effective component in the enhancement of marine resources in inshore waters. Juveniles and seeds produced by hatcheries or collected from the wild in other areas are removed rapidly from the ecosystem by destructive fishing gears such as push nets or small-mesh trawl nets. Furthermore, in order to retain the released stocks within the immediate vicinity and minimize losses through out-migration, suitable habitat must be available to them. Therefore, habitat restoration and/or enhancement and establishment of exclusive fishing rights may be necessary prerequisites for any marine re-stocking exercises.

Natural refugia play a central role in the sustainability of fisheries. The existence of large-scale natural refuges for population of fished species contributes to the resilience of communities of commercially fished species to the effects of high fishing effort level. The identifying important spawning and nursing grounds of fisheries resources in the established of fisheries refugia could help improving management of fisheries.

Immediate action is required to prevent further loss of habitat and damage to fish stocks. A range of effective community-level mechanisms must be developed to assist fishers to restore habitats and rebuild stocks. These mechanisms are likely to be specific to different stocks and habitats. Habitat creation and the establishment of artificial reefs, the use of fish attraction devices and predator removal all have potential in the region.

The project is proposed based on the following resolution and plan of action as endorsed at the Millennium Conference:

Resolution 9: Work towards the conservation and rehabilitation of aquatic habitats essential to enhancing fisheries resources.

Plan of Action A4: Optimize the use of inshore waters through resource enhancement programs such as promoting the installation of artificial reefs and structures, encouraging coordinated and effective planning for coastal fisheries management programs, undertaking environmental impact assessment studies, restocking of commercially important fish species and developing human resources for the implementation of such programs.

Plan of Action A8: Develop and maintain freshwater fisheries through inter-agency coordination of multiple-use water resources and trans-boundary inland fisheries management, promoting awareness of the importance of freshwater fisheries for local food security, rehabilitating and restoring habitats for migratory freshwater fish, restocking indigenous fish species to enhance productivity and encouraging culture-base freshwater fisheries where appropriate.

2. PROGRAM

2.1 Objectives

This Project titled “Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement” is being proposed to:

- 1) Investigate/diagnose the fishery resource status of critical fishing grounds and fisheries refugia sites;
- 2) Evaluate feasibilities and environmental/socio-economical impacts by resource enhancement practices; and
- 3) Develop regional management approach of coastal fisheries in the rehabilitated habitats in ASEAN Region.

2.2 Program description

TD will be the responsible SEAFDEC Department for this project and will manage and coordinate all project activities. Other ASEAN Member Countries which have been identified as core countries will be involved in implementing the relevant project activities on a cost-sharing basis to develop Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement program and to conduct pilot projects to implement the program in their respective countries.

The project involves the identification of an appropriate resources enhancement tools for the region in order to develop management measure and formulate strategies and guideline through the regional consultative meeting. Regional training programs will be conducted to build up capacity in ASEAN Member Countries for promote sustainable fisheries resources enhancement.

The expected outputs for the project include development of strategies and guide line for implementing resources enhancement program to promote sustainable fisheries resources enhancement, developing human resources in ASEAN Member Countries for the implementation of resources enhancement programs.

Project monitoring and evaluation will include annual progress reports, and end-of activity workshops.

3. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

Activity 1. Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices

Sub-Activity 1.1 Investigation / review of the status of critical fishing grounds in the Southeast Asian region

Investigation of the existing basic information and research works in identifying the critical fishing grounds as well as spawning and nursery grounds known also as “Fishery Refugia” for commercial fishes including bottom and pelagic species, will be conducted. Information collection would be conducted through deskwork and visit to the Member Countries. The results of the information gathering will be used for mapping and assessment by indices of the status of the critical fishing grounds in the region.

Sub-Activity 1.2 Information collection on suitable designs of resource enhancement practices including their evaluation and promotion

Investigation of existing information and research works on the effective designs/models and methodologies for the resource enhancement tools/practices used in various fisheries habitat will be conducted. Information collection would be conducted through deskwork, visit to Member Countries.

Sub-Activity 1.3 Workshop/Expert consultation on resource enhancement practices

This activity includes workshops as well as expert consultations to identify appropriate and effective resources enhancement tools for various fishery habitats.

Sub-Activity 1.4 Workshop/Expert consultation on identification of critical fishing grounds and on regional habitat rehabilitation and management approach

The workshops/expert consultative meetings will be conducted on identification of critical fishing grounds and fishery refugia. This activity will also be developed based on recommendations during the organized regional workshops. Local people’s indigenous knowledge and participation will be major factors to bring about and sustain an active fisheries habitat rehabilitation and management program. Scientific data and information will be supported by the views of the local people who will choose the right means or methods to strengthen their activities.

Activity 2: Technical assistance led by pilot project sites and capacity building on rehabilitation of fisheries resources and habitats/fishing grounds

Sub-Activity 2.1 Technical assistance in a pilot site for suitable designs of resource enhancement practices

In this activity, selected onsite study and evaluation on enhancement practices including artificial reefs impact to fisheries resources and environment are conducted in Rayong province, Thailand.

Sub-Activity 2.2 Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fishery ecosystem management

In order to develop strategies and actions in rehabilitating the critical fishing grounds as practical management measures, critical fishing grounds will be selected for diagnosing fishing grounds and monitoring the achievements of rehabilitation program in selected pilot sites such as sea grass beds for abalone in Iloilo, Philippines.

Also Case studies on the selected priority important fisheries ecosystem identified and evaluated in cooperation with Member Countries, will be conducted including a case study by SEAFDEC on identification and evaluation of fisheries ecosystem in the fresh water reservoir in Nam Ngum, Lao PDR.

Sub-Activity 2.3 Capacity building on rehabilitation practices of fisheries resources and habitats/fishing grounds

Promotion of capacity building and public awareness of environmental-friendly resources enhancement practices will be promoted to the Member Countries through the training Course.

No Activity in 2010

Sub-Activity 2.4 Capacity building on identification of critical fishing grounds and on regional habitat rehabilitation and management approach

This sub-activity has the training course, which will strongly support the transfer of assistance both in term of technical and management aspects to promote the enhancement of fisheries habitat among Member Countries, to improve their capacities in the preservation and rehabilitation of critical fishing grounds and fishery refugia.

No Activity in 2010

Activity 3: Promotion and extension on rehabilitation of fisheries resources and habitat/fishing grounds in ASEAN Region

Sub-Activity 3.1 Information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds for public awareness

Documentation of the best practices of the project implementation will be carry out, which can be translated into guidelines/procedures and used as inputs in the preparation of IEC (information, education and communication) materials for dissemination in the region.

Sub-Activity 3.2 Regional seminar for end of the project

Regional seminar will be held for evaluating projects and finalizing the guidelines and other materials for information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds.

No Activity in 2010

3.1 Planning of the Project Activities

Project/Activity Title	Duration
Activity 1. Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices	
Sub-Activity 1.1 Investigation / review of the status of critical fishing grounds in the Southeast Asian region	Jan. - Dec.
Sub-Activity 1.2 Information collection on suitable designs of resource enhancement practices including their evaluation and promotion	Jan. - Dec.
Sub-Activity 1.3 Workshop/Expert consultation on resource enhancement practices	Aug.
Sub-Activity 1.4 Workshop/Expert consultation on identification of critical fishing grounds and on regional habitat rehabilitation and management approach	Nov.

<p>Activity 2: Technical assistance led by pilot project sites and capacity building for rehabilitation of fisheries resources and habitats/fishing grounds</p> <p>Sub-Activity 2.1 Technical assistance in a pilot site for suitable designs of resource enhancement practices</p> <p>Sub-Activity 2.2 Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fisheries ecosystem management</p>	<p>Mar., Jun., Sep.</p> <p>Feb., May, Aug., Oct.</p>
<p>Activity 3: Promotion and extension on rehabilitation of fisheries resources and habitat/ fishing grounds in ASEAN Region</p> <p>Sub-Activity 3.1 Information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds for public awareness</p>	<p>Jan. - Dec.</p>

3.2 Expected Outcomes

- 1) Investigation / review of the status of critical fishing grounds in the Southeast Asian region;
- 2) Information collection on suitable designs of resource enhancement practices including their evaluation and promotion;
- 3) Workshop/Expert consultation on resource enhancement practices including artificial reef design;
- 4) Workshop/Expert consultation for recognizing the approach and area on the harmonization between responsible fisheries and habitat management;
- 5) Technical assistance in pilot sites for diagnoses of critical fishing grounds;
- 6) Technical assistance in pilot sites for suitable designs of resource enhancement practices including their evaluation and promotion;
- 7) Technical assistance in pilot sites for evaluation of fisheries ecosystem management: corals, mangroves, sea-grass, soft-bottom sea beds, rivers, reservoirs, etc.;
- 8) Promote the sharing of regional experiences with the national projects, and case studies through fishing community consultation; and
- 9) Information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds for public awareness.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries
Lead Country:	Singapore
Lead Department:	MFRD
Total Duration:	2007-2009

1. INTRODUCTION

Many small and medium-sized fish processing establishments (SME) in ASEAN Member Countries find it difficult to implement quality assurance systems due to economic and technical constraints. They comprised largely of pre-processing establishments (PPE) which produce semi-processed raw materials for main processing establishments and traditional products processing establishments (TPE). PPE supply semi-processed raw materials such as shrimp, crab, squid, fish and bivalve mollusk to main fish processing establishments. The processes carried out in these establishments may include peeling, de-heading, degutting, de-skinning, cooking, picking, filleting or shucking depending on the raw materials involved. Thus, PPE can play a significant role in determining the quality and safety of raw materials and subsequently of the finished products. In the ASEAN region, traditional fish products represent a significantly large part of total fish utilization and are a major source of animal protein. As a result, these products are vitally important to food security, especially considering that most of it goes to the marginalized and poorer segments of the population. Considering the importance of these products to the diet in the ASEAN region and the importance of a safe food supply to food security, it is imperative that the TPE apply appropriate Good Manufacturing Practice (GMP) programs to assure quality and safety of these products. The program will develop quality assurance systems for these SME that incorporate GMP as a first step towards the implementation of HACCP and help them meet safety and quality assurance requirements.

The program is proposed based on the following resolution and plan of action as endorsed at the Millennium Conference:

Resolution 14: Improve post-harvest technologies to ensure fish quality assurance and safety management systems which are appropriate for small and medium-sized enterprises in the region, taking into account the importance of traditional fish products and food security requirements.

Plan of Action C4: Develop and apply fish quality and safety management systems that ensure food safety and support the competitive position of ASEAN fish products on world markets through the implementation, validation and verification of Hazard Analysis and Critical Control Point (HACCP) based systems and improved laboratory practices, and adapting quality and safety management systems so that they may be applied to small and medium enterprises in the ASEAN region.

The program is also in line with the ASEAN Roadmap for Integration of Fisheries Sector Measure No. 46 under the ASEAN Framework Agreement for the Integration of Priority Sectors.

2. PROGRAM

2.1 Objectives

- 1) To develop GMP for Small and Medium-sized Fish Processing Establishments (SME) in ASEAN Member Countries; and

- 2) To promote the implementation of GMP/SSOP programs in Small and Medium-sized Fish Processing Enterprises (SME) thereby assuring quality and safety of fish products in ASEAN Member Countries.

2.2 Program description

MFRD will be the responsible SEAFDEC Department for this program and will manage and coordinate all program activities.

ASEAN Member Countries which have been identified as participating countries will be involved in implementing national projects on a cost-sharing basis to develop GMP guidelines in PPE and TPE, and to conduct pilot projects to implement GMP programs with commercial cooperants in their respective countries.

The program involves the development and implementation of GMP guidelines and programs for PPE and TPE through national projects and pilot projects with commercial cooperants in participating ASEAN Member Countries. Handbooks on GMP guidelines will also be prepared and distributed to Member Countries to assist them to conduct national training programs.

The expected outputs for the program include development of GMP guidelines for PPE and TPE, publication of handbooks on GMP guidelines to promote implementation in SME, conduct of pilot projects on GMP implementation in SME and End-of-Activity Workshops.

Program monitoring and evaluation will include annual progress reports, regular monitoring and evaluation of the pilot projects, and End-of-Activity Workshops.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

In this final year of the project, 2009, three regional activities have been conducted namely, the Development of GMP for TPE (which was continued from last year) (Activity 3.1), Publication of GMP handbook for TPE (Activity 3.2) and End-of-Activity (EOA) Workshop on GMP for TPE (Activity 3.3).

Activity 3.1: The participating ASEAN Member Countries have completed their national projects to develop GMP for their selected TPE (as in Table below) and have submitted the GMP drafts to MFRD for editing and compilation.

Country	TPE
Brunei Darussalam	Fermented shrimp paste (<i>belacan</i>)
Indonesia	Salted boiled fish (<i>pindang</i>)
Lao PDR	Fermented fish (<i>prahok</i>) & Dried fish
Malaysia	Fish cracker (<i>keropok lekor</i>)
Myanmar	Fermented (pickled) fish & Fish sauce
Philippines	Smoked milkfish & Shrimp sauce
Singapore	Fish balls and fish cakes
Thailand	Fish sauce & Dried fish
Vietnam	Fish sauce & Fermented tiny shrimp paste

Activity 3.2: Publication of handbook on GMP for TPE . The drafts of the GMP for selected TPE by the participating ASEAN Member Countries are in the process of being edited and will be compiled into a handbook on GMP for TPE. The handbook will then be published by MFRD.

Activity 3.3: The End-of-Activity (EOA) Workshop on GMP for TPE was successfully conducted from 6 – 7 October in Singapore with a total of 25 participants comprising of two participants from each ASEAN Member Countries, MFRD staff and the Assistant Japanese Trust Fund Manager. The 2-day workshop program included presentations on the GMP developed by the ASEAN Member Countries for their selected TPE and case studies on GMP implementation in PPE or TPE in ASEAN Member Countries. The workshop also held discussions on the GMP drafts to finalize them for the publication of the handbook on GMP for TPE.

Project/Activity Title	Duration	Remarks
Activity 3.1: Development of GMP for TPE	Apr 2008 - Mar 2009	100% accomplished
Activity 3.2: Publication of GMP handbook for TPE	Oct 2009 - Mar 2010	30% accomplished
Activity 3.3: End-of-Activity (EOA) Workshop on GMP for TPE	6-7 Oct 2009	100% accomplished

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

No activities are proposed in 2010.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Chemical and Drug Residues in Fish and Fish Products in Southeast Asia - Biotoxins Monitoring in ASEAN
Lead Department: Marine Fisheries Research Department
Lead Country: Singapore
Total Duration: 2009-2012

1. INTRODUCTION

Consumption of a variety of shellfish and fish causes an increasing number of human intoxications around the world. Around 400 poisonous fish species exist and, by definition, the substances responsible for the toxicity of these species are biotoxins. Marine biotoxins represent a significant and expanding threat to human health in many parts of the world. The impact is visible in terms of human poisoning or even death following the consumption of contaminated shellfish or fish, as well as mass killings of fish and shellfish, and the death of marine animals and birds.

The Codex Alimentarius Code of Practice for Fish and Fishery Products (CAC/RCP 52-2003) defined biotoxins as poisonous substances naturally present in fish and fishery products or accumulated by the animals feeding on toxin producing algae, or in water containing toxins produced by such organisms.

Monitoring seafood for toxicity is essential to manage the risks. However, there are several limitations in monitoring for toxicity such as the variation in toxin content between individual shellfish, different detection and even extraction methods for the various toxins requiring a decision which toxins one is testing for, and the frequency of sampling to ensure that toxicity does not rise to dangerous levels in temporal or spatial gap between sampling times or locations. Furthermore, the growing harvest of non-traditional shellfish (such as moon snails, whelks, barnacles, etc.) may increase human health problems and management responsibilities. (FAO, 2004)

In view of these, MFRD has proposed a project on biotoxins monitoring in ASEAN to increase the attention in expanding and improving initiatives to monitor, detect and share information on marine biotoxins in order to reduce the public health risks associated with the consumption of contaminated shellfish and fish.

2. PROGRAM

2.1 Objectives

- 1) To develop the methodologies on biotoxins analyses through human resource training;
- 2) To obtain an understanding of levels of biotoxins occurrences and incidences in fish and fish products in ASEAN;
- 3) To establish protocols for harmonization;
- 4) To encourage Member Countries without monitoring system to establish their own system;
- 5) To establish a directory of reference of experts and responsible persons; and
- 6) To enhance analysis capability to a acceptable confidence level with the 1-year survey.

2.2 Program description

The project will be implemented through the following activities and sub-activities:

Activity 1: Regional Technical Consultation Meeting (RTC) [Year 2009]

The Regional Technical Consultation Meeting will be held in Singapore in 2009 to initiate the project and plan for all the project activities. All the ASEAN-SEAFDEC Member Countries will be invited to the meeting and to participate in the project activities. ASEAN-SEAFDEC Member Countries will present country papers on the status of biotoxins monitoring systems in their countries' fisheries industry. A national project leader for each country will be designated to be responsible for implementing and monitoring the project in his/her country. Countries will be identified to conduct surveys in biotoxins detection and monitoring. The meeting also aims to identify the necessary training needs and finalise the details of the training course to be conducted and the implementation of the survey. In addition, the meeting will also discuss the publication of the technical report for the survey results.

Activity 2: Biotoxins Analyses Regional Training Course [Year 2010]

A Regional Training Course will be conducted in 2010 on methodologies to analyse biotoxins for fish and fisheries products. It is envisaged that the regional training course will be conducted in Singapore and the objective is to build up the technical capability of the region's laboratory personnel in biotoxins analyses. The 8-day (working days) Regional Training Course on Biotoxins Analysis will be conducted between June to July 2010 in Singapore. At the Regional Technical Consultation on Biotoxins Monitoring in ASEAN held from 26 to 28 August 2009 in Singapore, the Meeting agreed that there is an urgent need to build up capability in Member Countries for biotoxins analysis and that the methods should be rapid and preferable using equipment such as High Performance Liquid Chromatography (HPLC) or HPLC Tandem Mass Spectrometer (LC/MS/MS).

2 participants from each member country would be invited to participate in this training course. It is envisaged that the government of the Member Countries who wishes to send more than 2 participants to sponsor the additional participant (countries' participants travel fare, allowances, accommodation and transportation) but limited to 20 overseas participants. The JTF budget would be used to pay for the expert(s)' and 18 participants' accommodation, allowance, airticket, teabreaks and lunches for the participants and trainer (up to 20 persons), materials and chemical supplies.

Activity 3: Biotoxins Survey [2011]

Participating countries will identify the project sites for the identified species for monitoring over a 1-year period. The national key project leader will be responsible for implementing and monitoring the progress of the survey in the respective country. It is envisaged that the respective countries will set up biotoxins analyses methodologies in their laboratories and conduct the analyses using those methods.

Sub-Activity 3.1: Setting up of biotoxins analyses

Sub-Activity 3.2: Implementation of biotoxins survey

Activity 4: Publication of Technical Report [2012]

MFRD will collate and publish the Technical Report on Biotoxins Survey in the third-quarter of 2012.

Activity 5: End-of-Project (EOP) Seminar [2012]

MFRD will organize and conduct an End-of-Project (EOP) seminar in October/November 2012 to present and disseminate the technical report on biotoxins monitoring in ASEAN.

3 PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
Regional Technical Consultation on Biotoxins Monitoring in ASEAN	26 to 28 August 2009, 3 days	<p>The RTC was held from 26-28 August 2009 at Novotel Clarke Quay Singapore.</p> <p>A total of 19 participants and 8 MFRD officers attended the meeting. A Japanese expert, Dr Toshiyuki Suzuki from National Research Institute of Fisheries Science to be the expert for the project was also present at the meeting.</p> <p>At the meeting, it was agreed that only 1 regional training course would be organised in Singapore between June/July in 2010. The course will be 8 days covering 5 methods. 2 participants from each member country would be invited to attend the training. Member countries' governments are welcome to sponsor additional participants to the training.</p> <p>It was also decided that the project survey would focus on the Paralytic Shellfish Poisoning (PSP) survey for green mussel/baby clams in all Member Countries and that the survey frequency would be weekly.</p>

4 PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

Planning for the project and activities (project/activity title and its short description) to be implemented in the year 2010 as well as expected outcomes. In case that there are linkages among programs, the linkages and coordination mechanism among concerned programs should be provided.

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Regional Training Course on Biotoxins Analyses	June/July 2010, 8 days	The training course will be conducted in Singapore. Dr Toshiyuki Suzuki from National Research Institute of Fisheries Science who is a leading expert in Diarrhoetic Shellfish Poisoning (DSP) analysis and possibly another Japanese expert Dr. Oshima, a leading expert in Paralytic Shellfish Poisoning (PSP) analysis, and a supplier for rapid testing kit will be invited to be the trainer(s) for the training courses

4.2 Expected Outcomes

It is envisaged that at the end of the training course, the participants would acquire the technical knowledge and capability for the following methods. The methods for biotoxins were selected as they were of importance to Member Countries and they would need to learn these methods in order to set up the biotoxins analysis facilities in their countries.

At the Meeting, the 5 methods that were identified for the training course are as follows;

- 1) Multi-component of Diarrhoetic Shellfish Poisoning (DSP) and lipophilic toxins (Yessotoxin (YTX), Pectenotoxins (PTX)) using High Performance Liquid Chromatography Tandem Mass Spectrometer (LC/MS/MS) method
- 2) DSP rapid method (using Japan commercially available ones)
- 3) Paralytic Shellfish Poisoning (PSP) using High Performance Liquid Chromatography (HPLC)
- 4) PSP using ELISA
- 5) Tetrodotoxin (TTX) using LC/MS/MS

The training course will also cover lectures on Biotoxins Monitoring System required by European Union and Japan. The information will be useful for Member Countries especially those who export to these countries.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Traceability Systems for Aquaculture Farms in the ASEAN Region
Lead Country: Singapore
Lead Department: Marine Fisheries Research Department
Total Duration: 2010-2014

1. INTRODUCTION

Traceability has become a major concern of the aquaculture industry, especially since it has become a legitimate requirement in major international markets such as the EU and the US. Furthermore as aquaculture production becomes more market and consumer driven, the greatest pressure for product traceability has been coming from the general public. Consumers are getting more and more concerned on what they eat – whether the food comes from a safe and sustainable source, and whether production, transportation, and storage conditions can guarantee food safety.

The Codex Alimentarius Commission (2004) defines traceability or product tracing as “The ability to follow the movement of a food through specified stage(s) of production, processing and distribution”. In an increasingly competitive food system, traceability has become a major tool in dealing with concerns of food safety, quality assurance, risk prevention, and gaining consumer trust. Traceability can be used to achieve different purposes or objectives, such as for food safety, bio-security and regulatory requirements or to ensure quality and other contractual requirements. For instance, external traceability allows the tracking of a product and/or attribute(s) of that product through the successive stages of the distribution chain (from farm to fork), while internal traceability (or enterprise traceability) is aimed at productivity improvement and cost reduction within a production unit (*e.g.* fish plant). Governments and organizations around the world have also been developing different systems on seafood traceability *e.g.* TraceFish (EU), TraceShrimp (Thailand).

In view of these developments, MFRD has proposed a project on traceability for the aquaculture industries in the ASEAN region to provide a platform for the sharing of information and experiences among the ASEAN Member Countries on traceability systems to better enable the regional aquaculture industries to implement appropriate traceability systems in aquaculture farms and to meet international traceability requirements in the network of aquaculture production, marketing, and trade.

2. PROGRAM

2.1 Objectives

- 1) To provide a platform for the sharing of information and experiences among ASEAN Member Countries on implementation of traceability systems in aquaculture farms in the region; and
- 3) To promote the implementation of traceability systems for aquaculture farms in the ASEAN region.

2.2 Program description

MFRD will be the responsible SEAFDEC Department for this program and will manage and coordinate all program activities.

A Regional Technical Consultation will be organized for ASEAN Member Countries to provide an overview on implementation of traceability systems for aquaculture farms in their countries

and to discuss on the project and its activities. Two on-site training workshops on traceability systems for aquaculture farms will be conducted by regional expertise with participating countries and commercial co-operants. The on-site training will preferably cover traceability systems for fish aquaculture and shrimp aquaculture farms. The expected outputs of the project include on-site training workshops and publication of the technical compilation on implementation of traceability systems for aquaculture farms in the ASEAN region.

The project will be implemented through the following activities and sub-activities:

Activity 1: Regional Technical Consultation (RTC)

MFRD will organize and conduct the 3-day Regional Technical Consultation (RTC) meeting in Singapore in 2010 to initiate the project and plan for all the project activities. The objectives of the RTC are:

- 1) To deliberate on the scope of the project with ASEAN Member Countries and to discuss on the project activities and schedule from 2010 to 2014;
- 2) To provide an overview of the status of implementation of traceability systems in aquaculture farms in the various ASEAN Member Countries through presentation of country reports;
- 3) To provide a platform for the sharing of experiences on implementation of traceability systems in aquaculture farms in the ASEAN region;
- 4) To identify regional expertise with knowledge and experience in developing and implementing traceability systems in aquaculture farms to provide on-site training and to develop the relevant training materials; and
- 5) To identify suitable countries for on-site training on traceability systems in one fish and one shrimp aquaculture farm.

Activity 2: Regional On-site Training Workshops on traceability systems in aquaculture farms

Two training workshops will be conducted on traceability systems for aquaculture farms (fish farm and shrimp farm), one each in 2011 and 2013. Each training workshop will be conducted on-site at an aquaculture farm in one of the participating countries as a study model for traceability systems. Regional as well as local expertise will be engaged to provide the training and develop the training materials for the workshop.

Sub-Activity 2.1: 1st On –Site Training Workshop – Country A (in 2011)

Sub-Activity 2.2: 2nd On –Site Training Workshop –Country B (in 2013)

Activity 3: Mid-Term Project Review Meeting

A 2-day Mid-Term Project Review Meeting will be organized by MFRD in the third quarter of 2012. The objective of the meeting is to provide updates on the project activities conducted as well as future activities and implementation of traceability systems in aquaculture farms in ASEAN Member Countries.

Activity 4: Documentation and publication of technical compilation

After the conduct of the training workshops, the regional expertise will submit a technical report on the implementation of traceability systems in aquaculture farms in the ASEAN region. The technical report will cover implementation know-how, difficulties faced and benefits of implementing traceability systems in aquaculture farms. MFRD will compile the information and findings from the on-site training workshops and use them to publish a technical compilation on traceability systems in aquaculture farms in the ASEAN Region.

Activity 5: End –of –Project (EOP) Workshop

MFRD will organize and conduct an End-of –Project workshop (EOP) in the last quarter of 2014 to present and disseminate the technical compilation on traceability systems in aquaculture farms in ASEAN region. At the EOP, participants will also present their proposed plans for implementing traceability systems in aquaculture farms in their country.

3. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

3.1 Planning of the Program Activities

Project/Activity Title	Duration	Remarks
Activity 1: Regional Technical Consultation (RTC) on Traceability Systems for Aquaculture Farms in the ASEAN Region	Oct 2010 (3 days)	MFRD will organize and conduct the 3-day Regional Technical Consultation (RTC) meeting in Singapore to initiate the project and plan for all the project activities. It is envisaged that there will be at least one resource speaker from Japan to be invited to present a resource paper on traceability systems in aquaculture farms and to assist to facilitate the consultation. All the ASEAN Member Countries will be invited to the RTC and to participate in the project activities. There will be 2 participants from each country, <i>i.e.</i> the ASEAN FPHT Network Coordinator and a National Expertise in traceability systems for aquaculture farms (either government or private sector). ASEAN Member Countries will present country reports on the status of traceability systems in their aquaculture industry. A national project coordinator for each country will be designated to be responsible for implementing and monitoring the project activities in his/her country.

3.2 Expected Outcomes

It is envisaged that the RTC will provide an overview on implementation of traceability systems for aquaculture farms in ASEAN Member Countries and initiate the project and plan for all the project activities. The RTC will identify suitable sites for the on-site training on traceability systems in aquaculture farms (fish farm and shrimp farm) with suitable commercial co-operants and finalise the details of the on-site training. The RTC will also identify the regional expertise who are able to provide the necessary training and develop the training materials.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Development of Technologies and Human Capacity Building for Sustainable Aquaculture
Lead Country:	The Philippines
Lead Department:	Aquaculture Department
Total Duration:	2005-2009

1. INTRODUCTION

The continuing population growth, the decline in marine fish catch, and the widespread poverty in the rural areas of the ASEAN region make it imperative that sustainable aquaculture be promoted to ensure food security and generate livelihood for the fisherfolk in the region. Recognizing this need, the Ministers of the ASEAN-SEAFDEC Member Countries responsible for fisheries declared in the Resolution, which they adopted in November 2001, that: "aquaculture production be increased in a sustainable and environment-friendly manner by ensuring a stable supply of quality seeds and feeds, effectively controlling aquatic diseases, promoting good farm management, and transferring appropriate technology." This declaration has been clearly specified and spelled out in details in the accompanying Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region, which the Ministers also adopted in November 2001.

In Regional Planning Meeting in February 2005, the Member Countries raised the following issues that need to be addressed: (1) consistent supply of quality seeds for various priority aquatic commodities to support the aquaculture industry in respective countries; (2) access to captive broodstock technology for important aquatic commodities; (3) environment-friendly culture technologies that promote socio-economic development and rural livelihood while optimizing the utilization of resources and inputs; (4) ecologically sound farm management; (5) conservation of ecosystems and biodiversity; (6) development of low fish meal, cost-efficient and environment-friendly aquafeeds; (7) diagnosis and control of aquatic diseases; and (8) monitoring and surveillance of occurrence of aquatic diseases. Although initial efforts have been made to address certain regional aquaculture issues during the implementation of the Special Five-Year Program from 2002 to 2005, there is a need to continue the activities that have been started in order to address the aforementioned concerns. The program is intended to address regionally relevant technology for sustainable aquaculture in the areas of broodstock development, genetic improvement, seed production, and culture systems of various priority species for aquaculture, through research and human capacity building.

2. PROGRAM

2.1 Objectives

The objectives of the Program are to: (1) establish consistent supply of quality seeds through the establishment and promotion of captive broodstock of selected species and refinement of larval rearing techniques; (2) promote ecologically sound aquaculture farm management by refining existing grow-out systems with the aim of increasing production, environmental sustainability and satisfying international trade standards; (3) establish database on nutrient requirement of priority species and nutrient composition and digestibility of feed ingredients in order to develop cost-efficient feeds utilizing locally available materials that are low in fish meal and environment-friendly; and (4) develop the human resource in the region for sustainable aquaculture through training, farm demonstration, production of training materials like manuals and handbooks, and mobilization of experts within the region.

2.2 Program Description

The Program includes the following activities: (a) Fresh-water Aquaculture of Indigenous Species (b) Integrated Agri-aqua Culture System; (c) Coastal Aquaculture and Mariculture; and (d) Captive Broodstock Development and Seed Production.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks (% completion)
(a) Fresh-water aquaculture of indigenous species	All year round	90
(b) Integrated agri-aqua culture system	All year round	90
(c) Coastal aquaculture and mariculture	All year round	90
(d) Captive broodstock development and seed production	All year round	90

(a) Freshwater aquaculture of indigenous species

(1) Genetic Improvement of *Macrobrachium rosenbergii*

- Percent weight gain and daily growth rate of juvenile *M. rosenbergii rosenbergii* stocked individually in cages for 85 days were 119.6% and 0.16 g d⁻¹ while 11.1% and 0.02 g d⁻¹ in the polyethylene tanks after 60 days. These different growth performances were ascribed to the rearing condition.
- Incubation and larval rearing salinity for the native Iloilo *M. rosenbergii rosenbergii* noted at 12 ppt (21 days incubation; with PL survival) against 0 and 6ppt (ave. 24 d; no PL survival). Survival to postlarval stage is low at 1% compared to 30-60% in domesticated *M. rosenbergii dacqueti*.

(b) Integrated agri-aqua culture system

(1) Rice-Fish Aquaculture: Economic study on the fish culture production in rice fields

- Seventeen villages in two communes from one district were selected as study sites.
- Enhanced the adoption of useful technology through stakeholder meeting and distribution of technical handbooks on rice-fish culture and small-scale pond culture techniques among the attendees.

(c) Coastal aquaculture and mariculture

(1) Development of strategies to extend the spawning season of sea bass (*Lates calcarifer*)

- Between January and April (off-season), mature fish were sampled from both the control tank and the heated tank. The number of mature fish increased in May and June. When suitable females and males were sampled, induced spawning was attempted.

(2) Development of tissue culture techniques for mass production of plantlets of "new and improved" strains of *Kappaphycus*

- Shoots from EMS and NTG treated sections of purple and tungawan strains of *Kappaphycus alvarezii*, which is a highly commercially important species producing carrageenan, were successfully regenerated.
- Outplanted young plants from tank culture to sea cages weighed 20-530 g as of June.
- Sixty young plants of *K. alvarezii* (purple) were outplanted in Caragasan in June 4.

(3) *Socioeconomic impact on the adoption of sustainable aquaculture technologies in fisherfolk communities*

- Beneficiaries varied in farm size and in mud crab culture practices. Some were into polyculture while others were engaged in monoculture.
- Respondents welcomed the mud crab nursery operation in their locality. Reasons given were: (i) they need not go elsewhere to buy seeds, (ii) illegal transport of seeds is minimized, and (iii) it will help improve their community.

(4) *International training course on marine fish hatchery*

- The training course was conducted on 18 May - 23 June 2009 with 9 participants from Brunei Darussalam, Cambodia, Malaysia, Germany, Myanmar, and The Philippines. Of the 9 participants, 4 received GOJ-TF fellowship grant, and the rest were either privately-sponsored or self-funded.

(5) *International training course on abalone hatchery*

- The training course was conducted successfully from 02 to 22 July 2009. There were 5 participants and 3 participants were sponsored by the Government of Japan Trust Fund. They were from the Philippines, Indonesia, and Thailand.

(6) *Technical assistance for pilot demonstration on mud crab grow-out culture in Myanmar*

- Initial body weight of 70 g crab gained average body weight of 200 g, showing better growth rate during culture period of 4 months.
- Pilot demonstration on mud crab grow-out culture encouraged and provided appropriate technology to the DOF staff.

(d) Captive broodstock development and seed production

(1) *Development of specific pathogen free (SPF) shrimp (Penaeus monodon, P. vannamei)*

- Restriction morphs obtained from RFLP analysis showed monomorphic patterns in three populations (Negros, Roxas and Bohol), while microsatellite marker analysis at 3 loci showed that Palawan population differed significantly from ten other populations. Genetic variability by population was also analyzed.

(2) *Studies on improvement of maturation of pond-reared Penaeus monodon broodstock*

- Effects of diets containing 10% and 20% of marine annelid meal on maturation were studied.
- Maturation of females (Stage II) was first observed 3 weeks after ablation. However, these regressed on the following week. Other females matured, but no spawning occurred.

(3) *Domestication of mud crab Scylla serrata*

- Wild mud crab *S. serrata* from various sources were analyzed for genetic variation.
- While the expected heterozygosity differed among populations, neither genetic variability between populations nor significant deviation from Hardy-Weinberg Equilibrium was found. This indicates the homogeneous population structure of *S. serrata* along the Pacific Ocean.

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

No activities are proposed in 2010.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Development of Fish Disease Surveillance System
Lead Country: The Philippines
Lead Department: Aquaculture Department
Total Duration: 2005-2009

1. INTRODUCTION

In the last few decades, aquaculture in Southeast Asia grew rapidly and contributed to the increase of food supply and well-being of the people in ASEAN region. However, due to careless health management, large number of infectious diseases emerged and the diseases are threatening sustainable aquaculture.

“The Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region” adopted by the ASEAN-SEAFDEC Senior Officials as a result of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People”, held in Thailand in November 2001, has the following items related to fish-health issues for aquaculture in the region:

- a. Reduce the risks of negative environmental impacts, loss of biodiversity, and disease transfer by regulating the introduction and transfer of aquatic organisms in accordance with the Regional Guidelines on the Responsible Movement of Live Aquatic Animals and Plants; and
- b. Improve capabilities in the diagnosis and control of fish diseases within the region by developing technology and techniques for disease identification, reliable field-side diagnostics and harmonized diagnostic procedures, and establishing regional and international referral systems, including designation of reference laboratories and timely access to disease control experts within the region.

To counter the disease problems and to implement the above-mentioned two items of the Plan of Action, the Government of Japan funded SEAFDEC for a regional fish disease project entitled “Development of Fish Disease Inspection Methodologies for Artificially-Bred Seeds” from 2000 to 2004. The project focus was on development of diagnostic methods of important viral diseases of aquatic animals in the region. Researches on the development of standardized diagnostic methods, husbandry methods for disease control and a monitoring method for residual chemicals in aquaculture products were conducted and the outputs were disseminated to ASEAN countries. Thus, the project has paved the way for the development of the disease control and surveillance system for the region.

Various infectious diseases due to viruses, bacteria and parasites often cause high mortalities of aquatic animals cultured in the region and still give a serious impact on aquaculture production. Moreover, new diseases are emerging due to the introduction of new aquaculture species to the region. Thus, taking necessary measures against those infectious diseases is an urgent and important issue to aquaculture in the region. The most urgent issue to be tackled for the development of healthy and wholesome aquaculture is to establish the network of resources and facilities for fish health diagnosis and human capacity building in the region. Therefore, the Aquaculture Department (AQD) of the SEAFDEC has proposed to extend the former project as a renewed project entitled “Development of Fish Disease Surveillance System” for five years from 2005 to 2009.

Despite regional and international agreements and precautionary measures on transboundary movement of exotic fish and shrimps, alien species are introduced for aquaculture and disease

problems continue to spread. These prove laxity in implementation of existing laws and regulations, absence of political will among concerned government agencies, or unbalanced prioritization between preservation of biodiversity and the economic gains promised by aquaculture of exotic species. Given that exotic species, and in some cases their diseases have been introduced into some parts of Southeast Asia, it is important to conduct surveillance and monitoring to know which areas are free of specific diseases. Information gathered by both passive and active surveillance will become important tools in managing aquaculture of native and exotic species.

2. PROGRAM

2.1 Objectives

The main objective of the program is to develop a surveillance system for diseases of aquatic animals in Southeast Asia through establishment of the network of resources and facilities for fish health diagnosis and human capacity building.

2.2 Program Description

This program consists of 4 components: (a) Research and Development (R & D) on refinement of diagnostic methods and development of new prevention methods for aquatic animal diseases, (b) Surveillance for important viral diseases of fish and shrimps in the region, and mobile clinics, (c) E-learning and Hands-on training, (d) Annual progress meeting.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks (% completion)
(a) Research and development (R & D) on refinement of diagnostic methods and development of new prevention methods for aquatic animal diseases	All year round	90
(b) Surveillance for important viral diseases of fish and shrimps in the region, and mobile clinics	All year round	90
(c) E-learning and hands-on training	All year round	80
(d) Annual progress meeting of 2009	Dec. 2009	80

(a) Research and development (R & D) on refinement of diagnostic methods and development of new prevention methods for aquatic animal diseases

(1) Development of control methods for viral nervous necrosis (VNN) of marine fish

- Vaccination using DNA vaccine showed a relatively higher survival on the vaccinated fish.
- Egg disinfection using ozone-treated seawater, iodine and Virkon were conducted. Results of the PCR confirmed that grouper eggs artificially infected were one-step positive.
- Cell culture assay also showed cytopathic effect, but none on the uninfected and eggs disinfected.

(2) Development of a vaccine against viral nervous necrosis in economically important marine fish

- Vaccinated grouper rechallenged with the homologous betanodavirus, showed higher survival rates (RPS: 100%) and significant increases in neutralizing antibody titers.
- Pompano fry bath immunized with formalin-inactivated betanodavirus and subsequently challenged with the homologous virus at 35 days post-immunization showed high survival rate compared with the control fish.

(3) *Development of immunological preventive methods for shrimp: Immunostimulation and vaccination strategies for WSSV prevention*

- A recombinant WSSV VP 28 protein vaccine is being produced as alternative to formalin-killed vaccine.
- Primers designed from published VP28 produced amplicons with the expected size for cloning in pET TOPO vector.
- *E. coli* cells transformed with the plasmid construct was screened by antibiotic resistance and plasmids from transformed colonies were isolated and sequenced.
- At least 3 random clones with confirmed correct sequences are being used in expression experiments.

(4) *Epidemiology of the white spot syndrome virus (WSSV) in different shrimp (*Penaeus monodon*) culture techniques in the Philippines*

- WSSV risk factors that could be associated with farm practices and physico-chemical properties and microflora of the pond water were identified.
- Sharing of water source with other farms and feeding live mollusks were identified as WSSV risk factors.
- Protective factors were feeding with natural food, high mangrove to pond area ratio, green water shrimp culture technique etc.
- Exposure to temperature fluctuation, pH fluctuation, <1.0m water level inside the pond could lead to WSSV infection with or without outbreak. Exposure to low salinity and low temperature after WSSV infection could lead to an outbreak

(5) *Pilot testing of the "indigenous probiotic" in grow-out shrimp ponds*

- Survey of private ponds for the experiment was conducted in Iloilo, Antique and Negros Occidental.

(6) *Haemorrhage disease on cultured freshwater catfish (*Pangasianodon hypophthalmus*) in Mekong Delta*

- Through bacterial isolation, histopathology and antimicrobial sensitivity test, the disease fishes collected in Vietnam with the clinical sign of haemorrhage in fin bases, especially in ventral fins, abdomen, and caudal peduncle and of white spot on liver and kidney were identified by API 20 E and API 20 A.

(7) *Research and analysis of chemical residue in aquacultures*

- After completing tank feeding experiments with 20 days acclimatization, 7 days antibiotic treatment and 45 days allowance for withdrawal period was followed.
- A total of 35 prawn samples were retrieved for the study on oxytetracycline and 34 for oxolinic acid. Extraction of antibiotics from the test animals has been started.

(b) Surveillance for important viral diseases of fish and shrimps in the region, and mobile clinics

(1) *Monitoring and surveillance of transboundary pathogens in cultured shrimps and freshwater prawn*

- *Penaeus monodon* and *P. vannamei* tested for viral diseases using polymerase chain reaction on WSSV, IHNV, TSV, and IMNV showed that all samples analyzed for TSV and IMNV were negative, while positive samples were obtained for IHNV and WSSV.
- This surveillance indicates that the two viral diseases TSV and IMNV are still presumed exotic to the country.

(2) *Parasite fauna of bivalves and gastropods in the Philippines*

- Gross observations of green mussels (*Perna viridis*) found the presence of parasitic copepod (3.4%). Squash preparation of gill tissues revealed the presence of larval stages of trematodes (26.3%).
- Histological examination revealed the presence of gregarine protozoan *Nematopsis* (1.7%). Ciliate were observed adjacent gill lamellae (6.9%).

(3) *Surveys of giant freshwater prawn viral disease, MrNV and SSV in Thailand (AAHRI, Thailand)*

- All five specimens of female brooders in Suphanburi province showed MrNV RT-PCR negative while positive in two specimens in Suphanburi province. The other 15 post larvae were negative.
- As for specimen obtained in grow-out farms, one of 12 in Suphanburi gave MrNV positive, while negative in the other 15 specimens in Chachengsao and Suphanburi provinces.

(4) *Survey of viral diseases of Pacific white shrimp, Litopenaeus vannamei, in Indonesia*

- The surveillance has been conducted in five provinces during January-June 2009, namely: Lampung, Banten, West Java, Central Java, and East Java.
- TSV was found in Lampung, Banten, West Java, Central Java, and East Java. Based on the available data (June 2009), the IMNV was found in East Java, West Java, and Lampung Provinces.

(5) *Surveillance of emerging fish viral pathogens in some Southeast Asian countries*

- A total of 545 carp samples consisting of koi, common carp, grass carp, silver carp collected from Cambodia, Philippines and Myanmar were assayed for KHV, SVCV and GCRV by cell culture, PCR/RT-PCR and infection bioassay.
- All samples showed negative results by cell culture, bioassay and by PCR/RT-PCR. The study, also, provided mobile clinic services for Myanmar.

(c) E-learning and hands-on training

(1) *Hands-on training/on-site training on advanced diagnostic techniques*

- On-site training on Fish Health Management for fisheries officers of Lao PDR is currently being planned.

(d) Annual progress meeting of 2009

- Annual progress meeting will be held to review the project achievement at SEAFDEC/AQD (Iloilo, Philippines) on December 2009.

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

No activities are proposed in 2010.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
 Program Title: Research and Development (R&D) of Stock Enhancement for Species under International Concern
 Lead Country: The Philippines
 Lead Department: Aquaculture Department
 Total Duration: 2005-2009

1. INTRODUCTION

The Southeast Asian region has a highly diverse marine fauna and flora, many of which have been traditionally used for human food and commerce. However, many species of marine animals are now considered threatened or endangered, because of heavy pressures of fishing, hunting, and collecting for food and trade. Heightened public interest in environment protection and resource conservation has become an important factor in fisheries development around the world; particularly, in policy formulation for and within the fisheries sector. The capture, collection, trade, and utilization of these species have been regulated under the Convention on the International Trade of Endangered Species of Wild Fauna and Flora (CITES) and/or other international and national mechanisms. In this regard, SEAFDEC responsible for the sustainable and wholesome fisheries and aquaculture development in the region has been undertaking the Program on Stock Enhancement for Threatened Species of International Concern since 2005 to address the environmental concerns raised by international public and to conserve threatened species in Southeast Asia.

2. PROGRAM

2.1 Objectives

The objectives of the Program are to: (1) develop ecologically sound strategies for stock enhancement including both hatchery and releasing technology; (2) encourage participation of local communities in stock enhancement; (3) develop methods and criteria for monitoring and evaluation of stock enhancement and conservation success; and (4) transfer the stock enhancement technologies and social strategies to the countries in the region.

2.2 Program Description

The Program includes the following activities: (a) Regional Workshop to review the status of stock enhancement in Southeast Asia, identify threatened species, and assess the existing technologies for such species; (b) Research on strategies for sea ranching and stock enhancement; (c) Verification of developed and established technologies; and (d) Training and information dissemination on stock enhancement.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks (% completion)
(a) Workshop to assess existing technology	No activity in 2009	100
(b) Research and development on strategies of sea ranching and stock enhancement	All year round	90

(c) Verification of developed and established technologies	All year round	90
(d) Training and information dissemination	Dec. 2009	100

(a) Workshop to assess existing technology

No activity was planned in this category.

(b) Research and development on strategies of sea ranching and stock enhancement

(1) Management of seahorses Hippocampus barbouri, H. comes, and H. kuda

- Formalin treatment of copepods fed to seahorses showed high survival (100%) of copepods when subjected to formalin treatment 30 ppm for 1 hour.
- Use of UV-treated seawater resulted in high survival (65.6%) as well as better growth of infant seahorses.
- Efficacy of providing illumination in cages at night to attract food organisms on the intermediated rearing of juvenile *H. comes* was proven.

(2) Seedproduction for stock enhancement of humphead wrasse Cheilinus undulatus

- No larvae of Napoleon wrasse have been transported from Palawan Aquaculture Corporation (PAC) to AQD probably because the spawning has been intermittent and egg/larval quality has been very erratic.
- Visit to the hatchery facilities as well as dispatch of SEAFDEC AQD hatchery technician/research assistant was planned but was not pushed through based on the advice of PAC personnel on site.

(3) Experimental release of hatchery-produced donkey's ear abalone, Haliotis asinina, in Carbin Reef, Sagay Marine Reserve, Negros Occidental

- Substrate preference of abalone after release into three replicates of 5x5x0.6m pen installed in Carbin Reef, Sagay Marine Reserve, of which the bottom part were corals, seaweeds, rock and sand was surveyed.
- The abalones were completely out of the transport pipes after 3 days, and most of the abalones went to the corals from Day 1 to 3, while 44.7% were found on the concrete slabs after 15 days.
- After 60 days, growth of abalone released in pens is comparable to abalones reared in sea cages fed *ad libitum* with fresh seaweeds *Gracilariopsis bailinae*.

(4) Stock enhancement of the abalone, Haliotis asinina, in Sagay Marine Reserve

- In Carbin Reef, Sagay Marine Reserve, 10 50-m long transects were laid out 100 m apart.
- From February 2009, a total of 57 abalones have been collected, of which 84.2% were wild, 5.3% hatchery-bred recaptures and 10.5% wild recaptures.
- Recaptures of hatchery-bred abalone which were released in July 2008 were observed from February and May 2009.

(5) Development of techniques for sea ranching of the donkey-ear abalone Haliotis asinina

- In wild abalone transect survey carried out in Ajuy, only two abalone individuals were captured.
- The baseline socioeconomic survey showed that fishers perceived slight improvement in fish abundance status due to municipal fishing ordinances.
- About 45% of fishers reported that present average catch of abalone range from 0-2kg per fishing trip.

(6) Stock enhancement of sea cucumber Holothuria scabra

- A training course on stock enhancement of sea cucumber has been prepared with holding hundreds of sandfish broodstock selected in pond and tanks as the materials.
- Manual for seed production of sandfish was also prepared, which covers management of broodstock, spawning induction, larval rearing, settlement preparation, and management of nursery systems.
- Results of a field experiment which looked at effects of stocking density and size at release in sea cages revealed that smaller juveniles (initial mean wt < 2 g) at lower stocking density (25 m⁻²) grew fast such that they can equal the mean size of the larger size class (initial mean wt > 3g) in a little over 2 weeks of cage rearing in Igang, Guimaras, and that after a month, growth started to plateau which suggest that thinning may be necessary as food likely becomes limiting inside cages.
- Biomass density after 34 culture days did not exceed 100g m⁻²
- Survival was lower for smaller sized juveniles especially stocked at higher density.

(7) *Fisheries and seed production of the angelwing clam Pholas orientalis for the rehabilitation of depleted wild stock*

- Broodstocks spawned naturally in captivity and successfully produced the first batch of larvae.
- Mass mortality of larvae was observed thereafter.
- Cause of mortality was found to be the ciliate- and copepod-contamination in *Isochrysis galbana*, a microalgal species exclusively preferred by angelwing clam larvae.
- New broodstock sources were identified in Negros Occidental.

(c) Verification of developed and established technologies

(1) *Growth and survival of hatchery-reared giant clam, Tridacna gigas, in ocean nurseries in Negros and Panay Islands*

- Giant clams reared in Sagay Marine Reserve and Igang Marine Station growths from initial shell lengths of 9.08±0.08 cm (April 2006) and 12.18±0.08 cm (February 2007) to 33.01±0.44 (June 2009) and 30.89±0.24 (March 2009), and satisfactory survivals of 69.42% and 85.33%, respectively.

(2) *Socioeconomic analysis of stock enhancement of abalone and giant clams in Sagay Marine Reserve in the Philippine*

- The follow-up survey among fishers to evaluate the learnings from information, education and communication activities held in 2008 revealed that only 17% understood stock enhancement. About 65% expressed that their participation in stock enhancement project can be compensated.
- On community organizing, 87% agreed on the possibility of organizing fishers to facilitate income-generating projects.

(d) Training and information dissemination

- Two aquaculture extension manuals were published: (1) Seed production and grow-out of mudcrab (*Scylla paramamosain*) by Nguyen Co Thach (Vietnam); and (2) Philippine freshwater prawns (*Macrobrachium* spp.).

4. PROPOSED ACTIVITIES FOR THE YEAR 2010

No activities are proposed in 2010.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Promotion of Sustainable and Region-oriented Aquaculture Practices
Lead Country:	The Philippines
Lead Department:	Aquaculture Department
Total Duration:	2010-2014

1. INTRODUCTION

Aquaculture is undoubtedly one of the practical ways for addressing the issues of food security and widespread poverty in the rural areas of the ASEAN region, which exports a great amount of fisheries products to Japan. However, aquaculture production in the region needs to be increased in a sustainable and environment-friendly manner as declared by the Ministers of the ASEAN-SEAFDEC Member Countries responsible for fisheries (the Bangkok Declaration 2001). In response, SEAFDEC Aquaculture Department, in collaboration with Member Countries, has implemented the project entitled “Development of Technologies and Human Capacity Building for Sustainable Aquaculture” as part of the Program on the Promotion of Sustainable Aquaculture in the ASEAN Region under Japanese Trust Fund 4 (TF-4) since 2005. The activities under this project focused on: (1) aquaculture of indigenous freshwater species; (2) integrated aquaculture systems; (3) coastal aquaculture and mariculture; and (4) captive broodstock development and seed production.

Broodstock and fry needed for the aquaculture of middle- and high-value commodities, which are major aquaculture products being exported to developed countries including Japan, depend mostly on coastal wild resources. This practice has seriously affected the sustainability of coastal resources. Domestication (TF-4) and selective breeding (Proposed Project for TF-5) of commercially important species will mitigate the pressure on coastal resources by providing stable and reliable supply of quality seeds from domesticated (TF-4) or selected (Proposed Project) broodstock. As in the case of the selective breeding of GIFT (genetically improved farmed tilapia), improved strains will enable small-scale farmers to practice aquaculture with lower investment, smaller farm areas but higher productivity. Seaweed aquaculture, which also needs improved strains, is a big industry in ASEAN countries. Japan is one of the major markets, importing materials (carrageenan, agar and alginates) processed from seaweeds as well as wet/dried seaweeds from ASEAN countries. Moreover, seaweeds have the capacity to remove wastes (nitrogen and phosphorus) from effluents of fish/shrimp aquaculture systems. Seaweed aquaculture is thus environment friendly, and a healthy environment is one of the requisites for sustainable aquaculture. However, the seaweed industry in the region is confronted with the continuous decline in the quality of cultivars, disease and harmful endophytes and the declining quality of carrageenan. Introduction of new and improved strains is an effective way to solve the said problems. Thus, genetic improvement of commercially important aquaculture species is essential to the promotion of sustainable aquaculture in the region.

Most aquaculture practices for commercially-important species consist of “Aquaculture with Feeding”. Aquaculture feeds are highly dependent on fish by-catch under unregulated fisheries. This has also seriously affected the sustainability of coastal resources. Moreover, improper feeding regimes using low quality feeds have led to environmental pollution and degradation. Development of efficient/low-pollution diets and optimum feeding regimes will minimize the negative impacts of aquaculture feeds on the environment. Furthermore, this will optimize growth, survival, reproductive performance and production of healthy animals, and consequently contribute to the supply of safe aquaculture products to the region and Japan. Thus, the development of environment-friendly feeds is crucial to the promotion of sustainable aquaculture in the region.

Intensive aquaculture systems have been adopted on a large scale to increase production. As a result, a number of serious problems have emerged, including environmental degradation and disease outbreaks, which continue to plague the aquaculture industry in the region. Aside from the progress in the studies on diseases and pathogens, a wide spectrum of technological views is needed to solve these problems. A stressful environment has been proven to be a crucial risk factor that can lead to disease outbreaks (TF4). Based on the results of TF4, one of the best ways to prevent disease outbreaks is to design farm management practices that will minimize stressors in the culture system.

Because institutional investment on aquaculture development has mainly centered on “research” and “development”, we do not adequately realize the importance of socio-economic activities for the promotion of sustainable and responsible aquaculture practices in rural communities. The successful adoption of aquaculture technologies in the ASEAN region may pave the way for livelihood improvement and poverty alleviation of rural communities. However, there is a lack of human resource to mediate the transfer of knowledge and practices of sustainable aquaculture technologies between researchers and fisherfolk. There is also a lack of practical ordinances or policies on responsible aquaculture practices in the level of the local government units. These may constrain the extension and adoption of sustainable aquaculture technologies. To achieve sustainability in the region, a holistic approach that incorporates both technical and socioeconomic activities including seminar / lectures / training should be implemented.

Specified training focusing on the culture of important fisheries commodities such as giant freshwater prawn, mud crab, and seaweed as well as several marine fish is the pressing need for extending the technologies to the Member Countries to hasten economic development in the region. In addition, to address important role of freshwater aquaculture in providing means of livelihoods and ensuring sustainable food supply to the people particularly in the remote rural areas of Southeast Asia, active promotion of sustainable freshwater aquaculture for rural communities should be undertaken.

In summary, the implementation of the proposed project is vital not only to the promotion of sustainable aquaculture in the region but also to the stable supply of safe aquaculture products to the region and Japan.

2. PROGRAM

2.1 Objectives

The objectives of the Program are to: (1) establish reliable mass seed production techniques for genetically improved strains of commercially important species through selective breeding and biotechnology; (2) develop environment-friendly and cost-effective practical feeds using ingredients available in the region and establish guidelines on feeding management for sustainable aquaculture; (3) develop farming management strategies that eliminate the risk factors through epidemiological and environmental approaches to prevent and control diseases; (4) identify clear policies for implementing sustainable aquaculture and to recommend policies for enhancing the adoption of suitable aquaculture technologies for the lesser developed countries in the Region; and (5) verify and disseminate the project achievements especially in the lesser developed countries in the region through demonstration, training, lecture/seminar and publication activities.

2.2 Program Description

The Aquaculture Department of SEAFDEC will be responsible for this project and will manage and coordinate all project activities. Other ASEAN Member Countries which have been identified as core countries in the project will be involved in implementing the relevant activities on a cost-sharing basis.

The present project involves genetic selection in mud crab *Scylla serrata*, tiger shrimp *Penaeus monodon*, giant freshwater prawn *Macrobrachium rosenbergii* based on set criteria aimed at producing subsequent generations that exhibit faster growth, better reproductive performance and disease resistance. It also includes the development of technology for the mass production of carrageenophytes *Kappaphycus spp.* plantlets with improved traits through biotechnology. In all these commodities, genetic monitoring to maintain high genetic variability and identification of possible genetic markers for the selected beneficial traits will be applied. The present project also includes the development of hatchery technology of emerging species with a pressing need to develop breeding, seed production and culture techniques, which will be updated in the “Regional Technical Consultations on Aquaculture Development in Southeast Asia” (RTC) scheduled for early 2010.

Efficient and low pollution feeds for various stages of commercially important aquaculture species such as milkfish, grouper, mud crab, black tiger shrimp and freshwater prawn using feed ingredients available in the region as replacement for imported fish meal will be developed. Likewise, a survey of the availability and quality assessment of feed resources in the Philippines and selected developing countries in Southeast Asia (Cambodia, Laos and Myanmar) will be conducted. Guidelines on proper feeding management to obtain optimal feed performance and to reduce the negative impacts of improper feeding on the environment will be done.

Based on the analysis of risk factors and other epidemiological data gathered from TF4, a management scheme to prevent or control shrimp diseases will be designed. Efficiency of the designed scheme will be tested by means of simulated tank and pond experiments which will be verified by farm trials.

The project will analyze the socio-economic impact of the transfer and adoption of aquaculture technologies in selected sites. The project will also identify the policies, institutional, and socioeconomic factors that help or hinder the adoption of the technology.

The results of the various studies in the project will be disseminated through the conduct of meetings, training courses, demonstration farm, lecture/seminar especially in the lesser developed ASEAN Member Countries and publication of manuals and/or textbooks.

3. PROPOSED ACTIVITIES FOR THE YEAR 2010

3.1 Planning for the Project Activities

Project/Activity Title	Duration
(a) Genetic improvement of commercially important species and development of hatchery technology	All year round
(b) Development of environment-friendly feeds using regionally available ingredients	All year round
(c) Establishment of managing technology of aquaculture environment	All year round
(d) Socioeconomic assessment and impact analysis of transfer and adoption of sustainable aquaculture technologies	All year round
(e) Technology extension and demonstration	All year round
(f) Publication	No activity in 2010
(g) Annual progress meeting and international workshop	Dec. 2010

(a) Genetic improvement of commercially important species and development of hatchery technology

*(1) Selective breeding of mud crabs *Scylla serrata**

The selection of *S. serrata* based on set criteria aimed at producing subsequent generations that exhibit faster growth and better reproductive performance will be tried.

- To further optimize broodstock management schemes
- To develop selective breeding program for the genetic improvement of mud crab *S. serrata*, focusing on improved growth and breeding performance

*(2) Selective breeding of black tiger shrimp *Penaeus monodon**

A breeding program that considers selection for beneficial heritable traits such as improved growth, disease resistance and breeding performance needs to be implemented to improve seed and broodstock quality and lessen the pressure on wild stocks.

- To adopt or modify, if necessary, established methods for broodstock management and larval rearing for selective breeding of *P. monodon*
- To be able to produce succeeding generations of *P. monodon* with improved reproductive performance, survival, growth, or disease resistance
- To monitor genetic changes to minimize inbreeding and maintain variability in succeeding generations of selectively-bred stocks

*(3) Genetic improvement of giant freshwater prawns *Macrobrachium rosenbergii**

Studies on preventing low seed yield, slow growth, poor production output and other problems associated with inefficient broodstock management are strongly needed. The objective in 2010 is as follows:

- To determine the effect of selection on production traits of existing hatchery-bred stocks of freshwater prawns at SEAFDEC/AQD

(4) Mass production of plantlets with improved traits

Tissue culture techniques need to be developed so that mass production of the 'new and improved' plants will be obtained for commercial farming. The objectives in 2010 are as follows:

- To mass produce young plants of the different cultivars or strains of *Kappaphycus* after optimizing the culture conditions using tissue culture techniques
- To establish land- and sea-based nurseries of the improved plantlets developed previously from tissue culture and mutagenesis

(5) Development of hatchery technology of emerging species

Domestication and selective breeding of commercially important species will mitigate the pressure on coastal resources. Based on the updated list of species which will be identified in the RTC on Aquaculture Development in Southeast Asia in early 2010, breeding, seed production and culture techniques for the said species should be developed. The objective in 2010 is as follows:

- To establish reliable breeding and mass seed production techniques for new species for aquaculture

(b) Development of environment-friendly feeds using regionally available ingredients

(1) Development of efficient and low pollution feeds for grow-out and broodstock (milkfish, grouper, mud crab, black tiger shrimp, and freshwater prawn)

The dwindling supplies of fish meal, rising cost of feed ingredients, and inefficient utilization of plant protein sources are obstacles to sustainable aquaculture production. The development of cost-effective and low pollution feeds based on plant protein sources is needed in the region. In 2010, the following objectives will be addressed:

- To develop cost-effective and low pollution aquafeeds for the grow-out and broodstock stages of grouper, milkfish, mud crab, shrimp, and freshwater prawn
- To determine the qualitative and quantitative requirements of grouper, milkfish, and mud crab for important micronutrients

(2) Establishment of guidelines for optimum feeding management through survey of availability and quality assessment of feed resources

Availability and quality assessment of feed resources in the Philippines, Cambodia, Laos, and Myanmar is essential for sustainable fish production. The 2010 objective is as follows:

- To survey the availability and assess the quality of feed resources in south- East Asia

(c) Establishment of managing technology of aquaculture environment

The best way to prevent disease outbreak is to make the animal resistant or tolerant to pathogens. This could be done by minimizing stress. A management scheme that will prevent or control diseases will be designed. The objective in 2010 is as follows:

- To gather additional information on different farm management strategies practiced by shrimp farmers from different regions in the Philippines and other Southeast Asian countries

(d) Socioeconomic assessment and impact analysis of transfer and adoption of sustainable aquaculture technologies

This new study will reinforce and validate observation on the transfer and adoption of technology in TF4 study. The study will analyze the socio-economic impact of the transfer and adoption of the technology in other rural communities. The objectives in 2010 are as follows:

- To analyze the socio-economic impact of the transfer and adoption of aquaculture technology in rural communities

(e) Technology extension and demonstration

(1) Giant freshwater prawn production training program

The activity will extend and demonstrate the production technique of *Macrobrachium* spp. to the trainees.

(2) Regional dissemination of mud crab farming program

No activity in 2010.

(3) Regional dissemination of black tiger shrimp farming program

No activity in 2010.

(4) Marine fish hatchery training program

This training program will extend and demonstrate the breeding, hatchery seed production, nutrition and health management in grouper, seabass, snapper *etc.*

(5) Abalone hatchery training program

This activity will offer the fundamental and essential hatchery technology of tropical abalone.

(6) Seaweed farming training program

No activity in 2010.

(7) On-line course on nutrition and on-site feed preparation training program

This activity will offer the fundamental and essential information on fish nutrition, feed formulation and feed management.

(8) Rural aquaculture program

Training focusing on promotion of community-based freshwater aquaculture for remote rural areas of Southeast Asia will be organized by SEAFDEC/AQD under this sub-activity, which will promote capacity building for establishing appropriate aquaculture systems applicable in remote rural areas.

(f) Publication

No activity in 2010.

(g) Annual progress meeting and international workshop

(1) Annual progress meeting

Project achievements will be highlighted and disseminated.

3.2 Envisaged Outcomes of the Propose Projects/Activities

The following are expected in 2010:

- 1) Mud crabs: Criteria and scoring system for the morphometric and non-morphometric characters will be established.
- 2) Black tiger shrimp: Reciprocal matings between wild-sourced broodstock from 2 to 3 sites previously determined to have populations with high genetic variability will be conducted, and the first generation (G1) will be produced.
- 3) Giant freshwater prawns: Information on the extent of the negative impact, if any, of domestication selection on the stocks will be generated.
- 4) Mass production of plantlets: Selected cultivars or strains of *Kappaphycus* for mass production of young plants will be identified.
- 5) Development of hatchery technology: Information on the reproductive biology of the coral trout (or other species identified during the RTC) as well as some of their physiological and nutritional requirements will be obtained.
- 6) Development of efficient and low pollution feeds: Environment-friendly feeds for marine fish and crustaceans from regionally available ingredients will be developed.
- 7) Establishment of guidelines for optimum feeding management: A list of available feed ingredients in Southeast Asia and an assessment of their quality and suitability for use in aquaculture feeds for tropical species will be established.
- 8) Managing technology of aquaculture environment: Best disease prevention and intervention technique used that is ecosystem friendly and cost efficient will be identified.
- 9) Socioeconomic assessment and impact analysis: Constraints and benefits of technology adoption will be clarified and/or substantiated.
- 10) Technology extension and demonstration: SEAFDEC/AQD will continue assisting the aquaculture sectors through technology extension and demonstration in the Southeast Asia region.
- 11) Promotion of Freshwater Aquaculture in rural communities: A training on community-based aquaculture will promote capacity building for establishing appropriate aquaculture systems applicable in remote rural areas.
- 12) Project achievements will be highlighted and disseminated, and End-of Project Report will be prepared.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Resource Enhancement of Internationally Threatened and Over-exploited Species in Southeast Asia through Stock Release
Lead Country:	The Philippines
Lead Department:	Aquaculture Department
Total Duration:	2010-2014

1. INTRODUCTION

The Southeast Asian region has a highly diverse marine fauna and flora, many of which have been traditionally fished, hunted and collected for human food and trade. As a consequence, many species of marine animals in the region are now considered threatened or endangered and are listed in CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) which has regulated capture, collection, trade and utilization of these species. Heightened public interest in environment protection and resource conservation has become an important factor in fisheries development around the world, particularly, in policy formulation for and within the fisheries sector.

The problem of diminishing populations of the CITES-listed threatened and endangered species as well as the high value, commercially important but over-exploited species needs immediate attention. Replenishing depleted resources may be done by regulating fishing effort, restoring degraded nursery and spawning habitats and/or through stock enhancement. The Southeast Asian Fisheries Development Center (SEAFDEC) is an intergovernmental organization established to promote sustainable fisheries development in the region. To address the issue on environment protection and resource conservation, especially of the threatened or endangered species, SEAFDEC has implemented the project on "Stock Enhancement of Threatened Species of International Concern" under the financial support of the Government of Japan Trust Fund 4 (TF-4) since 2005. Under this project, SEAFDEC Aquaculture Department (AQD) has been conducting studies on basic methodologies of seed production and/or release strategies for seahorse, Napoleon wrasse, sea cucumber, giant clam, donkey's ear abalone and angelwing clams that are CITES-listed and/or over-exploited species.

Although stock enhancement is an effective approach that can sustain or enhance depleted resources, basic technologies and information on stock enhancement are still lacking in the Southeast Asian countries. Based on the progress of the former Program (TF-4) and the up-to-date concept and policies of stock enhancement, the proposed project aims at replenishing resources of internationally threatened and over-exploited species in Southeast Asia through environment-friendly stock enhancement. In addition, the project will promote to transfer basic technologies and information on stock enhancement to Member Countries through training courses. The program will contribute both to the world-wide concern on the resource conservation of the said species and to the sustainable utilization and exploitation of natural coastal resources in the region through environment-friendly manners.

2. PROGRAM

2.1 Objectives

The objectives of the Program are to: (1) establish resource enhancement strategies of CITES species and regionally over-exploited species; (2) establish stable seed production technologies appropriate for release with genetic consideration; (3) develop stock enhancement strategies including site assessment, stock release, monitoring and recapture, taking into consideration

impact of release on wild population and other species; (4) develop a sustainable utilization and exploitation of natural coastal resources through stock enhancement; (5) establish guidelines and demonstration sites, and to conduct seminars/lectures on stock enhancement practices in Southeast Asia; (6) assess and evaluate the socioeconomic impacts of stock enhancement to fishery stakeholders and management strategies suitable for adoption in fishing communities; and (7) transfer basic technologies and information on stock enhancement to Member Countries.

2.2 Program Description

SEAFDEC/AQD will be responsible for the management and coordination of all activities under the present project.

The present project will try to restore stock levels of some species listed in CITES (sea horse *Hippocampus* spp. and Napoleon wrasse *Cheilinus undulatus*) and those heavily-exploited but economically-important species in Southeast Asia (sea cucumber *Holothuria scabra*, donkey's ear abalone *Haliotis asinina*, and mud crabs *Scylla* spp.) through stock enhancement program as well as to assess socioeconomic strategies and to implement training courses. Depending on the resource situation of species other than those mentioned above, it might be needed to incorporate new activities on the newly concerned species in this TF-5.

SEAFDEC/AQD will achieve an environment-friendly and sustainable stock enhancement program through the establishment of seed production technologies that take into account the preservation of the genetic diversity and release procedures so that unintended negative impacts of stock release on the wild populations and the other species should be minimized. In this proposed project, therefore, information about the population of the species concerned, their habitats and fisheries conditions will be gathered prior and subsequent to any attempts of stock release.

An effective stock enhancement program can be accomplished by establishing release strategies such as tagging methods, optimum size-at-release, site selection, conditioning animals prior to release, and construction of artificial shelters. These strategies can improve survival of the released animals in the wild.

A holistic stock enhancement program can be complemented through socio-economic studies that will identify appropriate community-based strategies for successful implementation of stock enhancement program in the area where the program is being carried out. The proposed project will also include on-site seminars/lectures for various stakeholders to uplift local awareness about and cooperation in stock enhancement activities.

Moreover, the efficient resource enhancement will be facilitated by the human resource building through the training course opened to the Member Countries. Through bridging the gaps of information and techniques on stock enhancement among Southeast Asian regions, higher incentives and responsibility will be inspired to enable the environment-friendly resource utilization.

The expected outputs of the project will include the establishment of strategies and guidelines of stock enhancement through sustainable, responsible and environment-friendly approach. The significant achievements of the project will be disseminated to ASEAN Member Countries to promote environment-friendly resource enhancement in the Southeast Asian region.

Project monitoring and evaluation will include annual progress reports, regular meetings and workshop.

3. PROPOSED ACTIVITIES FOR THE YEAR 2010

3.1 Planning for the Project Activities

Project/Activity Title	Duration
(a) Stock enhancement of internationally threatened species (species listed in CITES)	All year round
(b) Stock enhancement of regionally over-exploited species	All year round
(c) Training course	No activity in 2010
(d) Publication	No activity in 2010
(e) Annual progress meeting of 2010	Dec. 2010

(a) Stock enhancement of internationally threatened species (species listed in CITES)

(1) Stock enhancement of seahorses, *Hippocampus comes* and *H. barbouri*

To restore the seahorse resources, further technical improvement is needed from refinement of the seed production through release technology. The 2010 objectives are as follows:

- To refine mass production technology for seahorse juveniles
- To conduct assessment of release sites
- To develop appropriate release technology

(2) Stock enhancement of Napoleon wrasse, *Cheilinus undulatus*

The present sub-activity will focus on collection of adults or juveniles of humphead wrasse for broodstock development. The reproductive development, along with physiological and nutritional requirements of the breeders will be studied.

- To collect wrasse juveniles for broodstock development
- To monitor/study the reproductive biology of the wrasse

(b) Stock enhancement of regionally over-exploited species

(1) Community managed sandfish *Holothuria scabra* sea ranching and stock release

Currently production of the sandfish juveniles can be done but on a limited scale. More efforts are needed to sustain the fishery of heavily exploited sea cucumbers in the region. In 2010, the following objectives will be attained:

- To profile and to monitor sandfish habitat, fishery and population.
- To implement advocacy campaign on sea cucumber fishery enhancement
- To implement site selection and participant training on sea cucumber sandfish culture, nursery, sea ranching and stock enhancement

(2) Stock enhancement of donkey's ear abalone, *Haliotis asinina*

To recover the sustainability of abalone resources, the present sub-activity aims to establish release strategies. The 2010 objectives are as follows:

- To monitor wild abalone and the presence of initially released abalone
- To compare growth rates and gonadal development of wild and released hatchery-bred abalone

(3) Stock enhancement of mud crab, *Scylla spp.*

Mud crabs are an important source of income for coastal fishing communities in the regions. Stock enhancement is essential to address the problem of declining populations. The 2010 activities are as follows.

- To select site and to obtain samples for genetic characterization
- To assess baseline data of mud crab population and fisheries

(4) Socioeconomic analysis and identification of strategies for managing released stocks of abalone and sea cucumber in the Philippines

The high demand for these high-value fishery species in the region led to high exploitation rates of the wild stocks being sourced from rural fishing areas. To conserve environment and to sustain biodiversity in the region, socioeconomic surveys through the following activities are essential

- To review literature on fisheries management; and stock release vs. ranching of abalone and sea cucumber
- To conduct socioeconomic assessment of study sites and to establish baseline information
- To continue information dissemination to improve awareness and engage community participation in the management of released stocks

(c) Training course

No activity in 2010.

(d) Publication

No activity in 2010.

(e) Annual progress meeting and international workshop

(1) Annual progress meeting

Project achievements will be highlighted and disseminated.

3.2 Envisaged Outcomes of the Propose Projects/Activities

The followings are expected in the year 2010:

- 1) Seahorses: amount and type of natural food requirements at different life stages, spawning season will be clarified, and fecundity, survival and growth rate of juveniles (*H. comes* and *H. barbouri*) will be improved.
- 2) Napoleon wrasse: information on the reproductive biology of wrasse as well as their physiological and nutritional requirements will be obtained.
- 3) Sea cucumber: Benchmark profile of the sandfish habitat, fishery and population will be clarified.
- 4) Abalone: An increase in abalone population from the hatchery-bred released abalone will be expected.
- 5) Mud crab: Population structure in the chosen study area and genetic structure in the population will be clarified.
- 6) Socio-economic activity: Baseline socioeconomic profile of the abalone and sea cucumber fishery in the release sites will be compiled.
- 7) Project achievements will be highlighted and disseminated, and End-of Project Report will be prepared.

PROGRAM DOCUMENT

Program Category: Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Accelerating Awareness and Capacity-Building in Fish Health Management in Southeast Asia
Lead Country: The Philippines
Lead Department: Aquaculture Department
Total Duration: 2010-2014

1. INTRODUCTION

Global aquaculture production is continuously increasing. However, outbreaks of fish diseases still significantly hinder healthy management of aquaculture animals, and continue to bring considerable economic losses in the fisheries and aquaculture sectors worldwide. The control of fish diseases and the promotion of fish health under farming conditions are essential components of aquaculture to ensure a stable supply of fish products. The concept of “healthy and wholesome” holistic approach to aquaculture was one of the six themes under Sustainable Aquaculture during the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People” that was held in Bangkok in November 2001. Aquaculture in Asia is seen as a major sector that will augment the declining global fish production because it can feed not only the growing ASEAN population but it will also meet the demand for fish by global trade partners including Japan.

There is also a growing pressure for developing countries to meet the various standards required by the global market. It is important to better understand the risks, impacts and management problems related to diseases because their quality greatly affects the commodities’ chance for export. Better understanding of issues affecting disease occurrences and their control can promote the livelihood of small holders and aquafarmers specifically in rural communities.

The status of fish health management remains generally poor in some ASEAN countries, although remarkable technical advances in the diagnosis, prevention and control of fish diseases have occurred worldwide. This requires not only technical development to enhance health of important aquatic species in Southeast Asia fisheries and aquaculture, but also the urgent acceleration of awareness and capacity building in fish health management in Southeast Asia. The latter would provoke small farmers and family-based enterprises composing a large sector of aquaculture in Southeast Asia to bring interest on fish health issues linking to the increases of productivity and food safety. Additionally, training and skills development for researchers in counterpart countries on on-site samplings and disease identification should be promoted until such time that they can do the work independently.

Of the technical aspect, the establishment of preventive management strategies should be pointed out as one of the most important development needed to maintain the disease-free status of fish stocks. This will enable the aquafarmers to strictly monitor the health status so that early and effective intervention strategies can be implemented.

The necessity to establish new methods other than chemotherapy, to prevent fish disease is increasing worldwide so as to guarantee food safety. This has accelerated studies on vaccination in recent years. However, at present, there are only a few commercially available vaccines for aquaculture animals, especially for shrimp, due to technical problems with vaccine production and delivery. Delivery by injection is not practical under field conditions. Immersion and oral administration have shown efficacy but the fate of the vaccine after uptake by epithelial and mucosal tissues and the duration of the protective response are uncertain. The use of probiotic bacteria has advanced in the last decade with the main objective of preventing bacterial diseases.

The use of probiotic bacteria as a vaccine carrier could also contribute to increased productivity and food safety.

Regarding parasitic diseases, especially the study and expertise on mollusk diseases are yet very scarce in spite of the increasing economic importance of these species. In addition, as for economically important freshwater fish species used as food fish, pertinent data on the parasite fauna in Southeast Asian countries, especially Cambodia, Lao PDR and Myanmar, have not been fully investigated, while comprehensive studies in the Philippines have already been conducted. Thus, the study investigating the occurrence of parasite fauna of mollusks and freshwater fish should be undertaken, especially for new or emerging disease. The need for a regional survey on parasites in freshwater fishes which are potentially harmful to humans was also emphasized during the 41st Meeting of the Council of the Southeast Asian Fisheries Development Center.

In the Japanese Trust Fund V (TF-5), the present project on Fish Health Management focus on the acceleration of delivery of information and awareness-building among the aquafarmers. At the same time, research and technology development should remain as significant activities to sustain SEAFDEC's role as "A Leading Fish Disease Technology Center in the Region". An integrated fish-health-care system expected to be established through this project will ensure a holistic approach to a stable supply of safe aquaculture products.

2. PROGRAM

2.1 Objectives

Health management is crucial in aquaculture. The activities in the Japanese Trust Fund V project aimed at Fish Health Management will not only produce information relevant to diagnostics, surveillance and control measures for various diseases obtained through the past activities since 2000, but also accelerate awareness and capacity-building in fish health management to facilitate controlling fish disease outbreaks and improving the production efficiency and sustainability of the aquaculture industry through the following objectives:

- 1) To compile case studies that explain the problems and challenges and possible solutions to the implementation of health care in rural aquaculture, and to boost staff capability as well as learning materials to further disseminate and sustain the activity;
- 2) To investigate the parasite fauna in freshwater fish and its diagnosis, pathology and host-parasite relationship;
- 3) To implement molecular diagnostic method for the detection of fish and shrimp viral diseases and preventive approaches that will enable the farmer to monitor the health status of their crop so that early and effective intervention strategies can be made;
- 4) To establish immunization regimen for the prevention of viral nervous necrosis for high value marine fish;
- 5) To establish novel prophylactic and therapeutic methods for the prevention of viral infections in commercially important maricultured fish;
- 6) To evaluate various carriers for shrimp vaccination and to establish practical delivery methods and efficacy under field conditions; and
- 7) To elucidate the parasitic diseases as well as symbionts of abalone among wild and cultured populations.

2.2 Program Description

The Aquaculture Department of SEAFDEC will be responsible for the management and coordination of the present project under the TF-5. This project focuses on health management of fish, mollusks and crustaceans, which is under the component of "Food safety of aquaculture products". Rationale of the present project is on the greater dissemination of the said knowledge to the Member Countries whose fish health management capacity still needs to be developed and improved. Dissemination activities especially in Myanmar, Cambodia, Laos PDR and the

Philippines need to be accelerated strongly because technical and administrative systems to carry out the tasks and duties necessary for the efficient control of diseases and for consumer protection are still inadequate.

3. PROPOSED ACTIVITIES FOR THE YEAR 2010

3.1 Planning for the Project Activities

Project/Activity Title	Duration
(a) Accelerating awareness about fish health management in resource-deprived countries through industry-wide capacity building	All year round
(b) Innovative research to guarantee food safety and sustainable production	All year round
(c) Dissemination of output of the project	Nov. – Dec.
(d) Annual progress meeting of 2010	Dec. 2010

(a) Accelerating awareness about fish health management in resource-deprived countries through industry-wide capacity building

(1) Survey on the status and needs of primary aquatic animal health care in small-scale aquaculture

The goal is to equip the Fish Health staff in Member Countries with capabilities to do disease surveillance and conduct simple research related to diseases and food safety. E-Learning through the web-based AquaHealth online will be the venue for disseminating the basic principles of health management in aquaculture. The following activities will be implemented:

- To collate information
- To prepare and to identify appropriate diagnostic techniques and visual tools, and to prepare field guides, recording and monitoring formats
- To identify collaborating staff in a partner institution
- To revise online training materials.
- To conduct e-Learning for wide capacity building

(2) Surveillance and training on parasite fauna of freshwater fish in some Southeast Asian countries

This surveillance study aims to investigate the parasite fauna in both wild and cultured freshwater fish of Cambodia, Lao PDR and Myanmar and to examine its diagnosis of infection, pathology and the host-parasite relationship through the following studies:

- To clarify the distribution, composition and pathogenicity of parasites fauna of freshwater fishes in Cambodia, Lao PDR and Myanmar
- To reveal host-parasite relationship

(b) Innovative research to guarantee food safety and sustainable production

(1) Molecular diagnosis and prevention of economically-important viruses in fish and shrimp

The study aims to develop Q-PCR-based detection method for fish and shrimp viral pathogens according to the following studies:

- To develop plasmid positive controls and standards
- To develop and to optimize Q-PCR protocols

(2) Establishment of immunization regimen for the prevention of viral nervous necrosis in high value marine broodfish

The present study will establish immunization regimen for the production of VNN-resistant sea bass and grouper broodfish stocks through the following studies:

- To test the efficacy of the formalin-inactivated vaccine in SEAFDEC-reared sea bass and grouper broodstock candidates in terms of immunogenicity, dosage and safety

- To determine the kinetics (onset and duration) of NNV-neutralizing antibody production and booster immunization in broodfish

(3) Establishment of novel prophylactic and therapeutic methods for the prevention of viral infections in commercially important maricultured fish

The main purpose of this study is to isolate indigenous bacteria and viruses from wild and cultured freshwater and marine fishes that possess antiviral properties against important viral diseases of fish.

- To isolate indigenous bacteria and viruses with antiviral properties from wild and cultured fishes, rearing water and soil, and alternatively from other resident aquatic organisms
- To isolate, purify and characterize antiviral substances from indigenous seaweeds

(4) Evaluation of carriers for practical delivery of vaccines to shrimp and other crustaceans

Formalin-killed vaccine developed in TF 4 will be field-tested to provide preliminary information for a later field trial with vaccines delivered by a vector/carrier in 2010.

- To produce formalin-killed virus in adequate quantities for field trial
- To evaluate the combination of immersion and oral route of vaccine delivery
- To compare the growth and survival rates of vaccinated and unvaccinated shrimps

(5) Parasitic and shell diseases of abalone (Haliotis asinina) in Philippines

The present study will investigate shell abnormalities and diseases of abalone with particular reference to parasites.

- To conduct the histopathological survey of shell diseases, mudworm, and parasites in different stages of abalone reared from the hatchery and grow-out sea cages

(c) Dissemination of output of the project

Manuals, posters, pamphlets and flyers describing disease prevention methods will be published and distributed.

(d) Annual progress meeting and international workshop

(1) Annual progress meeting

Project achievements will be highlighted and disseminated.

3.2 Envisaged Outcomes of the Propose Projects/Activities

The followings are expected in the year 2010:

- 1) Aquatic animal health care in small scale aquaculture: Sampling protocols and diagnostic techniques will be transferred to the Member Countries through e-Learning;
- 2) Surveillance and training on parasite fauna of freshwater fish: The surveillance data will provide information on fish parasites harmful to humans found in wild and cultured freshwater fish in Southeast Asian region;
- 3) Molecular diagnosis and prevention: The established and optimized Q-PCR protocols in economically-important finfish and shrimp and baseline data on the threshold levels of the different viruses will be established;
- 4) Establishment of immunization regimen: The onset, peak, and persistence of NNV-neutralizing antibodies and booster immunization in broodfish will be established;
- 5) Establishment of novel prophylactic and therapeutic methods: Essential information on species composition profiles of bacterial and viral flora of wild and cultured fish, rearing water and soil, and as well as other aquatic organisms possessing antiviral properties will be obtained;
- 6) Evaluation of carriers for practical delivery of vaccines: A method to produce adequate quantities of formalin-killed virus and suitable route of vaccine delivery will be established;

- 7) Symbionts and shell diseases of abalone: Baseline of health information on grow-out and hatchery-bred cultured abalone will be established; and
- 8) Project achievements will be highlighted and disseminated, and End-of Project Report will be prepared.

PROGRAM DOCUMENT

Program Category: Programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title: Food Safety of Aquaculture Products in Southeast Asia
Lead Country: The Philippines
Lead Department: Aquaculture Department (in collaboration with Marine Fisheries Research Department)
Total Duration: 2010-2014

1. INTRODUCTION

The use of antibiotics and other chemicals in aquaculture is widely practiced to help meet the increasing demand for aquaculture food. These antibiotics and chemicals detected in aquaculture products appear to derive from material inputs during rearing, mostly from contaminated feed ingredients and therapeutants for prevention or treatment of diseases. Thus, cultured shrimps and fish in various stages from hatcheries to grow-out ponds are exposed to chemical contamination. On the other hand, with the ever-growing and worldwide concern for food safety, fish farmers are faced with the challenge of producing safe food from farm to fork. Government regulations are becoming stricter on the uncontrolled use of chemicals due to their adverse effects on human health, the environment and the development of pathogen resistance. Many chemicals have already been banned and the use of some is being regulated. The spectrum of allowable chemicals for aquaculture is becoming narrower, with the trend towards the use of environment friendly mitigating agents geared to a more responsible approach to aquaculture.

The mechanisms of accumulation and withdrawal of some antibiotics and chemicals have already been studied in developed countries. However, these data were generated using their species and under environmental conditions that are different from the conditions prevalent in the Southeast Asian region. Moreover, there are very limited data available on the withdrawal period of antibiotics and the presence of chemical residues in aquaculture products from the region, a considerable portion of which are exported to developed countries including Japan. Considering the growing-awareness on issues of food safety of aquaculture products, it is an urgent matter that SEAFDEC should take the lead in establishing regional guidelines on the right usage of antibiotics and other chemical inputs that will allow farmers to increase production of safe food using the environment-friendly technologies that will be developed by implementing the proposed project. The results of this project will also be useful for the formulation of policy recommendations for a concerted action by governments of the ASEAN Member Countries.

2. PROGRAM

2.1 Objectives

There is a lack of basic information on the dynamics, especially withdrawal periods, of antibiotics and other chemicals commonly used in aquaculture in Southeast Asia. Among the project activities identified, priority will be given to studies on administration and determination of clearance rates of selected chemical inputs, especially those that are widely used in aquaculture systems. These will help determine appropriate withdrawal periods under tropical aquaculture conditions. Information derived from these activities will be very important inputs for establishing the guidelines, including determination of appropriate methods for detection of these chemical inputs for surveillance purposes. The project also involves an investigation on the situation of antibiotics/chemicals usage and regulations/regulatory mechanisms not only in ASEAN Member Countries but also in selected developed countries.

The objectives of the present study will be summarized as follows.

- 1) To investigate the status of antibiotics and chemicals usage in aquaculture in the ASEAN countries;
- 2) To survey and monitor the chemical contaminants in aquaculture products and feeds especially in developing ASEAN Member Countries;
- 3) To establish guidelines on the proper usage of antibiotics and chemicals for farmers; and
- 4) To promote food safety awareness from farm to fork following the established guidelines.

2.2 Program Description

AQD will be the responsible SEAFDEC Department for this project and will manage and coordinate all project activities. Other ASEAN Member Countries, which have been identified as core countries will be contacted for possible collaboration on the surveillance of chemicals usage/regulation, and the analysis of the target chemicals under a cost-sharing basis.

Surveillance activity of chemical contaminants such as pesticides, mycotoxins and antibiotics will be continued based on the results of TF4.

The expected outputs for the project will include the establishment of guidelines on appropriate administration and withdrawal of chemicals that are easily adopted by the fish farmers in the ASEAN region. The guidelines will also be useful for some possible action or policy formulations by governments of the ASEAN Member Countries. Seminars and lectures on food safety awareness for stakeholders will be conducted annually.

Project monitoring and evaluation will include annual progress report/meeting, publication of project achievements and International Workshop. An International Workshop on "Food Safety of Aquaculture Products in Southeast Asia" will be conducted to collect and exchange updated information among the Member Countries.

3. PROPOSED ACTIVITIES FOR THE YEAR 2010

3.1 Planning for the Project Activities

Project/Activity Title	Duration
(a) Withdrawal period of antibiotics in milkfish, <i>Chanos chanos</i> and some freshwater fish species cultured in the tropics	All year round
(b) Surveillance of chemical contaminants in aquaculture products and feeds: Levels and classification of contaminants in aquaculture products, aqua feeds and aqua feed ingredients in the Philippines and other Asian countries	All year round
(c) Investigation of the situation of antibiotics/chemicals usage and regulations in aquaculture	No activity in 2010
(d) Guidelines on appropriate administration and regulation of antibiotics/other chemicals	Jul.-Sep. 2010
(e) Annual progress meeting and international workshop	Dec. 2010

(a) Withdrawal period of antibiotics in milkfish, *Chanos chanos* and some freshwater fish species cultured in the tropics

The use of antibiotics is sometimes inevitable, especially in an outbreak of a disease. Milkfish is the most common cultured species in the Philippines and is now fast becoming an export aquaculture commodity. Most often, monoculture technique is employed however, polyculture system is also being practiced and the milkfish-shrimp polyculture is quite common. Although

outbreaks of bacterial infection during milkfish culture have seldom occurred, risk of exposure to antibiotics in a polyculture system increases if its co-culture species is at risk of bacterial infection. Likewise, freshwater fish species like tilapia could be at risk to exposure to antibiotics during culture. Data on withdrawal periods of antibiotics, which is essential to secure food safety, are very limited for fishes raised in the Southeast Asian region. In the present activity, therefore, we will establish withdrawal periods of antibiotics from marine fish such as milkfish and freshwater fish such as tilapia to contribute in the establishment of guidelines on the production of safe aquaculture products from Southeast Asia.

- To extract and analyze antibiotics from marine fish such as milkfish and freshwater fish such as tilapia

(b) Surveillance of chemical contaminants in aquaculture products and feeds: Levels and classification of contaminants in aquaculture products, aqua feeds and aqua feed ingredients in the Philippines and other Asian countries

A wide range of chemicals are used in the culture of popular aquaculture species. There are also chemicals applied or used in the processing of feed ingredients and in the manufacture of aquafeeds. The indiscriminate use of these chemicals however, poses dangers to human health since some of these chemicals have been detected in aquaculture products. For health reasons of consumers and the safety regulations imposed by importing countries on aquaculture products, there is a pressing need to survey at this time the chemicals used in aquaculture. Activity 2 will determine the presence and levels of commonly used chemicals in aquaculture in aquaculture products such as fish and shrimps, and to determine levels of chemical contaminants, such as antibiotics, fungicides, feed additives, toxin binders *etc.* in aqua feed and feed ingredients, and in aquaculture products through the survey which will be done in the Philippines and in selected southeast Asian countries.

- To determine the presence or levels of commonly used chemicals in aquaculture in aquaculture products such as fish and shrimps
- To determine levels of chemical contaminants, such as antibiotics, fungicides, feed additives, toxin binders, etc. in aquafeed and feed ingredients, and in aquaculture products such as fish and shrimps

(c) Investigation of the situation of antibiotics/chemicals usage and regulations in aquaculture

No activity in 2010.

(d) Guidelines on appropriate administration and regulation of antibiotics/other chemicals

(1) Guideline preparation/publication

No activity in 2010.

(2) Training course/e-Learning

Training course to promote food safety awareness among stakeholders will be conducted annually.

- To promote food safety awareness among stakeholders

(e) Annual progress meeting and international workshop

(1) Annual progress meeting

Project achievements will be highlighted and disseminated.

(2) International workshop

No activity in 2010.

3.2 Envisaged Outcomes of the Propose Projects/Activities

The followings are expected in the year 2010:

- 1) Withdrawal period of antibiotics: The appropriate withdrawal periods of certain antibiotics from milkfish reared under laboratory conditions will be determined and these information can be used in the establishment of guidelines;
- 2) Surveillance of chemical contaminants: Levels of chemical contaminants (such as antibiotics, fungicides, pesticides, feed additives, toxins, binders) in aquafeeds and feed ingredients, and in aquaculture products such as fish and shrimps will be determined;
- 3) Training course to promote food safety awareness among stakeholders will be conducted;
and
- 4) Project achievements will be highlighted and disseminated, and End-of Project Report will be prepared.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Research for Stock Enhancement of Sea Turtles
Lead Country:	Malaysia
Lead Department:	Marine Fishery Resources Development and Management Department (in collaboration with Training Department)
Total Duration:	2004-2009

1. INTRODUCTION

Southeast Asian countries had been recognized as one of major nesting sites for sea turtles in the world. These reptiles are highly migratory and most probably share waters of Southeast Asian region. In addition, regional effort should be undertaken to reduce the mortality especially due to accidental catch by fishing gears. Thus, regional cooperation among Member Countries in conserving sea turtles is vital to ensure their survival. Understanding the discreteness of sea turtles stocks or how the stocks relate to each other, the migration routes and their interaction to fisheries is crucial for a proper regional management of these endangered sea reptiles.

2. PROGRAM

2.1 Objectives

The objectives of this project are:

- 1) To collect and compile biological and ecological information on sea turtle nesting populations in the Southeast Asian region for collaborative conservation and management of sea turtles in the region;
- 2) To identify the stock/population of sea turtles in the Southeast Asian region using mtDNA sequence;
- 3) To estimate the level of multipaternity of green turtle nesters at a pilot study beach;
- 4) To estimate the migration routes and foraging habitats of sea turtles through satellite telemetry study;
- 5) To obtain the regional biological information such as nesting and foraging ground, inter-nesting interval, nesting frequency, growth rates and migration patterns of sea turtles through tagging activities;
- 6) To collect and compile information on sea turtle poaching in the region;
- 7) To report on the situation of interaction between sea turtle and fishing operation;
- 8) To compare fish catch efficiency of using circle hook in comparison with the conventional j-hook type through a series of study; and
- 9) To promote the guidelines for reduction of sea-turtle mortality in fishing operations.

2.2 Program description

This program is composed of two components including four projects and seven activities as follows:

Component 1: Meeting/Workshop/Training

Activity 1: The Core Expert Group Meeting

The Responsible Research Officers from participating SEAFDEC Member Countries and Resource Persons would discuss and compile the results/outcomes of each activity in 2009. The meeting will also discuss to formulate the research plan for Japanese Trust Fund V Program from 2010 to 2014.

Component 2: Research

Project 1: DNA study

Activity 1: Multiple paternities

The analysis of the remaining tissue samples of green turtle hatchlings from 10 nesters in pilot study beach (Mak Kepit, Redang Island, Malaysia) is to be finished. The microsatellite DNA markers will be used to identify each individual of the males, which mate with the nesting females during nesting season. The paternal bands will be sequenced to identify the paternal identity.

Project 2: Sea turtle tagging and satellite telemetry

Activity 1: Tagging of sea turtles

Inconel tagging and monitoring of the tag recovery for sea turtle nesters is to be conducted to get the information of migratory routes, foraging grounds, reproductive biology and growth rates, and to estimate stock size of sea turtle resource for a specified nesting beach in participating SEAFDEC Member Countries.

Activity 2: Satellite telemetry

To get information on the long-distance movement, real migratory routes and foraging grounds, satellite telemetry studies would be conducted for an olive ridley turtle in Brunei Darussalam and in Myanmar, and for a leatherback turtle if available.

Project 3: Information Collection on Sea Turtle Poaching

Activity 1: Information Collection on the Sea-turtle Illegal Direct Captures

Information on the cases of illegal direct captures of sea turtles in each Member Countries is to be collected and compiled to know the actual status of sea turtle poaching which may deteriorate regional efforts to conserve sea turtles.

Project 4: Interaction between Sea Turtles and Fisheries

Activity 1: Information Collection on the Sea-turtle Interaction from Fishing Activities

With the aim to reduce the sea turtles incidental mortality, understanding the interaction of the sea turtles interaction with fishing operation is the main focus of this project activity, including R&D on modification of gillnets and others. A preliminary research on the response of sea turtles with different sound frequencies, and information collection on the sea turtles interaction with fishing operations through the informal discussion with local fishers has been conducted in collaboration with relevant partners/initiatives.

Activity 2: Information dissemination

The outcomes from this study such as the mitigation of sea-turtle mortality in gillnet and other fishing activities are to be concluded for building awareness for publicity. The results from promotion on the use of C-hook in hook and line fishing and the outputs from R&D on the modification/improvement of the gillnet are to be published and disseminated.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
Component 1: Meeting/Workshop/Training Activity 1-1: <i>The Regional Core Expert Group Meeting</i>	20-21 Oct 2009	90% completed The Responsible Research Officers from the participating Member Countries and Resource Persons discussed on the results/findings of project activities for 2009, such as tagging and satellite telemetry studies. Responsible SEAFDEC Technical Officers presented regional analysis on these activities. The Meeting also discussed on the planning of the sea turtle conservation program under Japanese Trust Fund V from 2010-2014. The Terminal Report for this Program will be published in December 2009.
Component 2: Research Project1: DNA Study Activity 2-1-1: <i>Multiple paternities</i>	Jan-Sep 2009	100% completed The analysis to evaluate the level of multiple paternities was completed using tissue samples of green turtle hatchlings from Mak Kepit beach, Redang Island of Terengganu, Malaysia. The findings suggested high level of multiple paternities occurred in the study beach.
Project 2: Sea turtle tagging and satellite telemetry Activity 2-2-1. <i>Tagging of sea turtles.</i> Activity 2-2-2. <i>Satellite Telemetry</i>	Jan-Dec 2009 Jul-Dec 2009	100% completed Continuously activities on tagging of sea turtles using Inconel tags and it's recovery at selected nesting sites for obtaining the information on migratory routes, foraging grounds, inter-nesting interval and nesting frequency and growth rates were conducted. 50% completed An olive ridley turtle attached with PTT was released at Muara, Brunei Darussalam on 4 th July 2009 for satellite telemetry study and has been monitored its migration. Another olive ridley turtle with PTT will be released on November 2009 in Myanmar.
Project 3: Information collection on sea turtle poaching Activity 2-3-1. <i>Information Collection on the Sea-turtle Illegal Direct Captures</i>	Aug-Oct 2009	100% completed Information on illegal direct captures of sea turtles in each Member Countries was reported by Technical Officers during the Core Expert Group Meeting in October and compiled.

<p>Project 4: Interaction between sea turtles and fisheries Activity 2-4-1. <i>Information collection on the sea-turtle interaction from fishing activities</i></p>	<p>Jan-Dec 2009</p>	<p>80 % completed Three major activities have been conducted under this category, including:</p> <p>(i) <i>Research on the interaction of sea turtle with fishing operation</i> A preliminary research on the response of sea turtles to the different sound frequencies has been conducted in collaboration with Department of Marine and Coastal Resources, Thailand. The result from this could help in finding appropriate material/way to mitigate sea turtle mortality in gillnet and other fishing gear. This research is still ongoing process.</p> <p>(ii) <i>Sea trial and demonstration to promote the use of the circle hook in line fishing.</i> The Sea Trial and Demonstration on the use of C-hook in Bottom Longline Fishing was carried out from 28 September to 1 October 2009 in Kuching, Sarawak, Malaysia, in close collaboration with SEAFDEC MFRDMD, Department of Fisheries Malaysia of HQ office and Sarawak office, and Fisheries Research Institute of Sarawak.</p> <p>(iii) <i>Information collection on interaction between sea turtles and fishing operation</i> During the period of implementing the activities (i) and (ii) as mentioned above; information collection through informal discussion has been made with the local fishers and other relevant agencies in order to obtain information on sea turtle interaction with fishing operation.</p>
<p>Activity 2-4-2. <i>Information dissemination</i></p>	<p>Apr-Dec 2009</p>	<p>20% completed A set of awareness building documents, basically based on the results from the previous sea trial and R&D carried out under this project, have been disseminated to the fishers and other relevant agencies, particularly during the Sea Trial and Demonstration on the use of Circle Hook, Kuching, Sarawak, Malaysia. All of the results of the preliminary research and report of the sea trial and demonstration held in Sarawak is planned to be completed before the end of 2009 and ready for dissemination.</p>

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

No activities are proposed in 2010.

PROGRAM DOCUMENT

Program Category:	Programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea
Lead Country:	Malaysia
Lead Department:	Marine Fishery Resources Development and Management Department (in collaboration with Training Department)
Total Duration:	2007-2011

1. INTRODUCTION

It is believed that pelagic fishes migrate for their ecological demand of spawning and feeding habits to the optimum environmental conditions such as current, water temperature, salinity, chlorophyll and prey. Information on migration is most important to consider stock identification and shared stock of pelagic fishes. In the Japanese Trust Fund II (JTF II) project on “Information Collection for Sustainable Pelagic Fisheries in the South China Sea” from 2002 to 2006 the genetic and morphometric analysis were conducted to identify subpopulation and shared stock of the targeted small pelagic fishes. However, subpopulations of these fishes as management unit could not be shown clearly.

Tagging activity is one of the methods to study migration route of small pelagic fishes, which sometimes contributes to good results. In the Gulf of Thailand, about 2,600 Indo Pacific mackerels (*Rastrelliger brachysoma*) were tagged and released by the DoF of Thailand from 1960 to 1965. From the study, about 16% of the tagged fishes were recaptured. The recovery rate is remarkably high for the small pelagic fishes, and gave useful information on the migration pattern of the species. The DoF Malaysia has also carried out tagging activities for pelagic fishes in the Malacca Strait and east coast of peninsular Malaysia from 1990 to 1998. However, information on migration patterns of the small pelagic fishes in the Southeast Asian region is still quite fragmentary and very poor.

Investigation on migration patterns of small pelagic fishes in the region is an urgent subject for consideration for stock identification and clarification of shared stock for important pelagic species. Status of the pelagic resources in the region is still good, judging from the trend of annual catch in the last 20 years. However, the demersal fish resources have experienced an over-exploitation or closed to maximum level exploiting in most part of the region. Therefore, tagging activity of the pelagic fishes is urgently needed for further clarification on the status of the resources / the state of exploitation

2. PROGRAM

2.1 Objectives

The objectives of this project are:

- 1) To conduct tagging operations in the participating SEAFDEC Member Countries;
- 2) To compile recovery information of the tagged fish recaptured; and
- 3) To analyze recovery data of the tagging program.

2.2 Program Description

This program comprises four projects including five activities as follows:

Project 1: Meetings/Workshops/Trainings for Effective Program Implementation

No activity for 2009. The 3rd Core Expert Meeting will be held in February 2010 to discuss on the progress of this program and to finalize implementation plans for the year 2010.

Project 2: Tagging Operation in the South China Sea and Andaman Sea

Activity 1: Tagging operation in the South China Sea

Tagging operation will be conducted in the participating SEAFDEC Member Countries in 2009 at ten tagging sites in the South China Sea. The targeted species of small pelagic fishes are *Rastrelliger kanagurta*, *R. brachysoma*, *Decapterus maruadsi* and *D. macrosoma*. The number of small pelagic species to be tagged and sites for tagging operation was finalized during the 2nd Core Expert Meeting in October 2008 with some modification.

Activity 2: Tagging operation in Andaman Sea

Tagging operation will be conducted in the participating SEAFDEC Member Countries in 2009 at five tagging sites in the Andaman Sea. The targeted species of small pelagic fishes are *Rastrelliger kanagurta* and *R. brachysoma*. The number of small pelagic species to be tagged and sites for tagging operation was finalized during the 2nd Core Expert Meeting in October 2008 with some modification.

Project 3: Data collection and analysis

Activity 1: Data collection and verification

Information for the number of fish tagged and recaptured will carefully be handled at the participating SEAFDEC Member Countries. Data will be verified before entering into the database that developed by SEAFDEC-TD. Work on data verification will be conducted by all Technical Officers of the project.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
Project 1: Meetings/Workshops/Trainings		No Activity
Project 2: Tagging Operation in the South China Sea and Andaman Sea. Activity 1: <i>Tagging operation in the South China Sea</i>	Jan-Dec 2009	50% completed Tagging operations were conducted in the participating SEAFDEC Member Countries at ten tagging sites in the South China Sea. The targeted species were <i>Rastrelliger kanagurta</i> , <i>R. brachysoma</i> , <i>Decapterus maruadsi</i> and <i>D. macrosoma</i> . Totally 15,700 tails of fish are expected to be tagged.
Activity 2: <i>Tagging operation in Andaman Sea</i>	Jan-Dec 2009	50% completed Tagging operations were conducted in the participating SEAFDEC Member Countries at five tagging sites in the Andaman Sea. The targeted species of small pelagic fishes were <i>Rastrelliger kanagurta</i> and <i>R. brachysoma</i> . Totally 7,000 tails of fish are expected to be tagged.



Project 3: Data collection and analysis Activity 1: <i>Data collection and verification</i>	Jan-Dec 2009	80% completed Information for the tagged and recaptured fish was verified and entered into the database that developed by SEAFDEC-TD.
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4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Project 1: Meetings/Workshops/Trainings		
Activity 1: <i>The 3rd Core Expert Meeting</i>	Feb 2010	The 3 rd Core Expert Meeting will be held in February 2010 in Malaysia to discuss progress of the project implementations in 2009 and to finalize the research plan for 2010 and onward.
Project 2: Tagging Operation in the South China Sea and Andaman Sea		
Activity 1: <i>Tagging operation in the South China Sea</i>	Jan-Dec 2010	Tagging operation will be conducted in the participating SEAFDEC Member Countries at nine tagging sites in the South China Sea. The targeted species of small pelagic fishes are <i>Rastrelliger kanagurta</i> , <i>R. brachysoma</i> , <i>Decapterus maruadsi</i> and <i>D. macrosoma</i> . The number of small pelagic species to be tagged and sites for tagging operation will be finalized during the 3 rd Core Expert Meeting.
Activity 2: <i>Tagging operation in the Andaman Sea</i>	Jan-Dec 2010	Tagging operation will be conducted in the participating SEAFDEC Member Countries at four tagging sites in the Andaman Sea. The targeted species of small pelagic fishes are <i>Rastrelliger kanagurta</i> and <i>R. brachysoma</i> . The number of small pelagic species to be tagged and sites for tagging operation will be finalized during the 3 rd Core Expert Meeting.
Project 3: Data Collection and Analysis		
Activity 1: <i>Data collection and verification</i>	Jan-Dec 2010	Information for the tagged and recaptured fish will be verified and entered into the database that developed by SEAFDEC-TD.

4.2 Expected Outcomes

The expected outcomes of the project in 2010 are as follows:

- 1) To conduct tagging operations in the participating SEAFDEC Member Countries;
- 2) To compile recovery information of the tagged fish recaptured;
- 3) To conduct data handling, updating and processing; and
- 4) To formulate the final implementation plan of tagging program in 2011 and onwards.

PROGRAM DOCUMENT

Program Category:	Program under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism
Program Title:	Research and Management of Sea Turtles in Foraging Habitats in the Southeast Asian Waters.
Lead Country:	Malaysia
Lead Department:	Marine Fishery Resources Development and Management Department (in collaboration with Training Department)
Total Duration:	2010-2014

1. INTRODUCTION

Southeast Asian countries had been recognized as one of major nesting sites for sea turtles in the world. These reptiles are highly migratory and share several certain foraging habitats in Southeast Asian region. Thus, regional cooperation among Member Countries in conserving sea turtles is vital to ensure their survival. In addition, regional effort should be undertaken to reduce the mortality especially due to accidental catch by fishing gears. This program is aimed to conduct several research activities to collect information of sea turtle in the foraging habitats, to reduce turtle's mortality by fisheries, and to formulate the management plans of fisheries to protect sea turtles in this region.

2. PROGRAM

2.1 Objectives

The objectives of this project are:

- 1) To collect ecological parameters of several pilot foraging habitats of sea turtles to study the key factors to manage these areas for sea turtle conservation;
- 2) To collect, compile, and review information of sea turtles migration corridors, nesting/foraging habitats, and their population structures in the region by genetic, satellite tracking, and conventional tagging studies for conservation and enhancement of the sea turtle populations in the ASEAN region;
- 3) To review fishing activities in the region which is possibly interacting sea turtle populations in their foraging/nesting habitats and migration routes in space and time;
- 4) To promote responsible fishing gears and practices by conducting commercial demonstrations and experimental trials of modified specific fishing gears to protect sea turtle populations in the region; and
- 5) To formulate and propose management plans on fishing activities and other activities to conserve and enhance sea turtle populations in the region based on the scientific information.

2.2 Program description

This program is composed of two components including four projects and seven activities as follows:

Component 1: Meeting/Workshop/Training

Activity 1: The Regional Planning Workshop

The Regional Planning Workshop is to be held in February 2010 in Malaysia. The Responsible Research Officers from SEAFDEC participating Member Countries and relevant experts will discuss on the overall project proposal for 5-years from 2010 to 2014 and to finalize the research plans for 2010.

Component 2: Research in Sea Turtle Foraging Populations

Activity 1: Scientific survey of selected foraging habitat

Scientific survey of ecological parameters, such as water quality and sea bottom substrates, in the sea turtle foraging habitats in the region will be conducted. For 2010, Brunei Bay would be studied as a pilot study site.

Activity 2: Genetic Study

During the scientific survey trip for ecological parameters in a pilot foraging habitats, tissue samples from sea turtles inhabiting there will be collected for genetic study to reveal sea turtle subpopulation structures in the region.

Activity 3: Tagging of sea turtles

Materials for conventional tagging study, *i.e.* inconel tags, tag applicators, *etc.*, will be purchased and distributed to the participating Member Countries for the tagging activities in the relevant countries for 2010 and onward. Tagging of sea turtles in the selected foraging and nesting ground will be carried out to get the biological and ecological information of sea turtles.

Activity 4: Satellite telemetry study

Satellite telemetry studies will be conducted to get information of real migratory routes of sea turtles to consider the potential interaction between regional fisheries. This information also provides the ecological complement for population identification of sea turtles by mtDNA method. For the year 2010, satellite telemetry studies will be conducted at a pilot foraging sites determined during the Regional Planning Workshop or a leatherback turtle in Malaysia if available.

Project 3: Interaction between Sea Turtles and Fishing

Activity 1: Information Collection on the Sea Turtles Interaction with Fishing

Research on interaction between sea turtles and fishing, including gillnet and hook-and-line, will be conducted. This is due to the assumption that these two types of fishing gears are the major cause of incidental catch of the sea turtles. Activities under this component include: (i) research on the interaction between sea turtles and gillnet fishing (continuation of experiment at the sea turtles conservation research station, and study/survey on by-catch of sea turtles in gillnet fishing), and (ii) research and promotion on the use of c-hook in collaboration with the Member Countries. It is envisaged that output from the research on interaction between sea turtles and gillnet fishing could be applicable for further modification of gillnet and hook-and-line fishing for reduction of sea turtles by-catch.

Activity 2: Information dissemination

The outcomes from the Activity 1 interaction between sea turtles and fishing will be published and disseminated.

3. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

3.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Component 1. Meeting/Workshop/Training		
Activity 1-1: <i>The Regional Planning Meeting</i>	Feb 2010	The Regional Planning Workshop is to be held in February 2010 in Malaysia. The Responsible Research Officers from SEAFDEC participating Member Countries and relevant experts will discuss on the overall project proposal for 5-years from 2010 to 2014 and to finalize the research plans for 2010.
Component 2. Research in Sea Turtle Foraging Populations		
Activity 2-1-1: <i>Scientific survey of selected foraging habitat</i>	May-Dec 2010	Scientific survey of ecological parameters, such as water quality and sea bottom substrates, in the sea turtle foraging habitats in the region will be conducted. For 2010, Brunei Bay would be studied as a pilot study site.
Activity 2-1-2: Genetic study	May-Dec 2010	During the scientific survey trip for ecological parameters in a pilot foraging habitats, tissue samples from sea turtles inhabiting there will be collected for genetic study to reveal sea turtle subpopulation structures in the region.
Activity 2-1-3: <i>Tagging of sea turtles</i>	May-Dec 2010	Materials for conventional tagging study will be distributed to the participating Member Countries. Tagging of sea turtles in the selected foraging and nesting ground will be carries out.
Activity 2-1-4: <i>Satellite Telemetry</i>	May-Dec 2010	Satellite telemetry studies will be conducted at a pilot foraging sites determined during the Regional Planning Workshop or a leatherback turtle in Malaysia if available.
Project 3. Interaction between sea turtles and fishing		
Activity 3-1-1: <i>Information Collection on the Sea Turtles Interaction with Fishing</i>	May-Dec 2010	Continuation on the study for modification of responsible fishing gears to reduce the sea turtles by-catch
Activity 3-2-2: <i>Information dissemination</i>	May-Dec 2010	Promotion and awareness raising on the use of c-hook in hook-and-line fishing in selected country (to be decided during the planning workshop scheduled in Feb 2010)

3.2 Expected Outcomes

The expected outcomes of the project in 2010 are:

- 1) The Regional Planning Workshop will be organized to discuss on the overall implementation plan from 2010 to 2014 under JTF V program and to finalize the research plans for 2010;
- 2) Information on ecological parameters in a selected foraging habitat for sea turtles in ASEAN region will be collected;
- 3) Information on population structures of sea turtles in ASEAN region will be collected by genetic studies;



- 4) Information on migration and foraging grounds of sea turtles in ASEAN region will be collected by tagging and satellite telemetry studies; and
- 5) Information collection on interaction between sea turtles and fishing, including gillnet and hook-and-line fishing through research/experiment and actual fishing trial.

LIST OF NON-FUNDED PROGRAMS 2009-2010

Project Title	Responsible Departments	2009	2010
Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement	TD	N	Y ¹⁴
The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region	MFRDMD	N	N
Development of Integrated Inland Fisheries Management in ASEAN Countries	MFRDMD	N	N
Utilization of Freshwater Fish in ASEAN Member Countries	MFRDMD	N	N
Good Laboratory Quality Management in ASEAN Member Countries	MFRD	N	N

¹⁴ This project will be linked to new Projects on “Rehabilitation of fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement” led by TD and “Resource Enhancement of International Threatened and Over-exploited Species in Southeast Asia through Stock Release” led by AQD starting from 2010.

Annex 6

OTHER PROGRAMS FOR THE YEAR 2009-2010

Project Titles	Responsible Department	2009	2010
Promotion of Set-Net; an Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management	TD	Y	N
Information Collection for Economical Important Species: as Surimi Raw Materials	TD	Y	Y
Cetacean Research in Southeast Asian Waters: Whale Sighting Program	TD	Y	Y
Promotion of Sustainable Freshwater Aquaculture for Rural Communities	SEC (AQD)	Y	N ¹⁵
Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches	SEC (TD)	Y	Y

¹⁵ This project will be terminated in 2009, however a linkage- new project on “Promotion of Sustainable and Region-oriented Aquaculture” led by AQD starting from 2010

PROGRAM DOCUMENT

Program Category: Other Programs
Program Title: Promotion of Set-Net; and Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management
Lead Department: Training Department
Total Duration: 2009

1. INTRODUCTION

The success of the Set-Net fishing technology transfer for sustainable coastal fisheries Management in Southeast Asian Region Case Study in Thailand was evaluated at the end of two years project in 2003-2005. The Small-scale fishermen on the coastal area in the Set-Net Project site were satisfied then the project is continuing under collaboration between the local fishermen and the local office of the Department of Fisheries, (Mae Rumpheung small-scale fisher groups and Eastern Marine Fisheries Research and Development Center (EMDEC) of Rayong Province. Set-Net was recommended to be an applicable fishing gear to promote Coastal fisheries Management and Resources Enhancement. Furthermore, it was recommended to have the furthers study to develop an appropriate fishing techniques for the tropical waters in the region

Set-Net plays an important role in the fishermen's cooperative activities. It could create many collaborative works among the fishermen and also local officers. However Set-Net fishing gear is still a new fishing technique for the local fishermen in this area, it needs more improvement in both fishing techniques and operation methods. Also it affect to the present fishing activities and environment needs more study in details.

Two years follow up survey has conducted in 2006 – 2007 “Follow up activities and Improvement of Set-Net Technology Transfer for sustainable Coastal Fisheries Management” was carried out continuously after the first phase of Set-Net project. Both fishing techniques and fishermen skill have a lot of improvement, gear designed, operation techniques and fisher group management have developed.

The Administrative Management Committee of Mae Rumpheung Fisher Group has function well, and effectiveness. The second set-net was installed on the same area with one mile away from the first unit under the fisher group management themselves. The fisher group management of Mae Rumpheung Set-Net Fisher Group need more technical advice to improve it. Among the conflicts and problems of coastal fisheries in the region, community-base management is one of the program in being promoted to solve those problems. Coastal fisheries management by local fishermen is also an expected program could be succeeded for the coastal fisheries resources management plan. Collaborative activities of the local fisherman on set-net project are the good process to strengthen the cooperative of fishermen and set-net is an Eco-Friendly fishing gear for the future.

Common policy development for the sustainable coastal fisheries management by local fishermen has been develop to some level, such as set up of the fisher group management and collaborative activities, Administrative and Management Committee, local marketing system, etc. The project target going to challenge the fisherman cooperative in future and set-net fishing will be an appropriate and eco-friendly fishing gear for their coastal waters.

2. PROJECT:

2.1 Objectives

- 1) To promote set-net fishing technology to be a tool of sustainable coastal fisheries management;
- 2) To develop an appropriate set-net fishing techniques for tropical shallow waters operation;
- 3) To develop the common policy concept of fisheries management of stationary fishing gear such as set-net through the project; and
- 4) To assist the Member Countries on development of sustainable coastal fisheries management.

2.2 Program Description

The project activities were emphasized in three activities. There are 1) Technical Assistance and Technology transfer, 2) Follow up surveys and 3) Production of Handbook/Publication.

3. PROGRESS OF ACTIVITIES IN YEAR 2009

SEAFDEC-TD team has participated with the working team of the Bone Set-Net Project, entitled “Empowerment of Coastal Fishing Community in South Sulawesi, through Technology Transfer of Community-based Set-net for Sustainable Fisheries, led by Tokyo University of Marine Science and Technology in the gear performance modification for improving the catch amount of set-net. Modification was done by adding another chamber net to the other end of the playground to study and compare the catch amount between the old and new chamber nets which located along the shorelines on the both sides of the playground. Modifications resulted in a better catch and income to the fisher groups.

The second technical advisory trip would be made to Malaysia both in Andaman Sea and the Gulf of Thailand sides on the Stationary Fishing Gear existing Survey and Discussion with stationary fishing gear operators. This trip will be made under an advice from Department of Fisheries, Malaysia during 17-24 November, 2009

Preparatory of the spare part nets for re-installation in Chonburi Province, Thailand in October 2009 (Replacement of the damaged nets and small modification)

Project/Activities Title	Duration	Remarks
Act. 1 Technical Assistance and Technology Transfer.	Jan-Oct 2009	
Act. 2 Follow up surveys	Jan-Nov. 2009	
Act. 3 Production of Handbook/Publication	On going	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

No activities are proposed in 2010.

PROGRAM DOCUMENT

Program Category: Other Programs
Program Title: Information Collection for Economic Important Species: as Surimi Raw Materials
Lead Department: Training Department
Participating Countries: Member Countries
Total Duration: 2006-2009

1. INTRODUCTION

Surimi is one of the important fisheries productions which are introduced to the region for more than two decades. Under the project on Information Collection of Economically Important Species as Surimi raw-materials in the Southeast Asian Region, the status of surimi industry is one of the most important issues in this project needed to be clarified. Based on the survey in 2006, nowadays a total 80 Surimi Plants are located in the region; 26 in Thailand, 15 in Vietnam, 3 in Myanmar, 8 in Indonesia and 15 in Malaysia. Due to the depletion of the fisheries resources, particularly the demersal resources in many countries in the region, this directly impact to the surimi industry.

Recently, it is found that there is a lack of stable supply of the raw materials in many countries. Also this species is exported from the region to international market including Japan as important materials for surimi products, and its production trend and sustainable production in the future is international concern. Taking into consideration importance of sustainable use of these economically important species as surimi raw materials for SEAFDEC Member Countries, the information collection for these species in the region are taken into accounts.

2. PROGRAM

3.1 Objectives

- 1) To continue in gathering information and to evaluate the existing potential fisheries resources of some economically species as Surimi raw materials in the Southeast Asia through the actual survey by research and fishing vessels;
- 2) To conduct the observer program in close collaboration with the Member Countries on data collection from commercial fishing vessels operated in the region to check to status of fisheries resources; and
- 3) To discuss and disseminate the progress report on existing potential fisheries resources of some economically species as Surimi raw materials through the Technical Consultation/Meeting.

Main objective of the activity in 2009 include finalization of the outcome of the project activities implementation since 2006 to date through the organization of the project-end-meeting.

3.2 Program description

Our reviewed works on the Surimi industry in the Southeast Asian region shows that only countries including Indonesia, Malaysia, Myanmar, Thailand and Vietnam have involved in Surimi processing for export. Depletion of fisheries resources especially surimi raw materials species will affected to the demand of the surimi industry. However, in some particular sea areas in the region, there still have potential resources to supply to the existing industries. Therefore, investigation of the status of fisheries resources as surimi raw materials is one of the important tasks in this project. In cooperation with the technical working group on data/information gathering, the observation program on the

commercial fishing boat in different fishing grounds of the Member Countries will be conducted under this program.

3. PROGRESS/OUTCOME OF ACTIVITIES IN THE YEAR 2009

Data and information collection since year 2006 have been reviewed and presented to the Project-end-Meeting organized at TD on 1-2 July 2009. Report of the Meeting was produced.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

No activities are proposed in 2010.

PROGRAM DOCUMENT

Program Category: Other Programs
Program Title: Cetacean Research in Southeast Asian Waters: Cetacean Sighting Program
Lead Department: Training Department
Duration: 2008-2011

1. INTRODUCTION

Cetacean is one of the most distinctive and highly specialized orders of mammals meant whale, dolphins, and porpoises. They include the largest animal that has ever lived, the blue whale; the highly intelligent and communicative dolphins; the tusked narwhals and blind river dolphins and singing humpback whale, nearly eighty living species in all. Most species are marine but some dolphin species are found in both marine and freshwater such as Irrawaddy dolphin (*Oranella brevirostris*) which is patchily distributed in shallow near shore tropical and subtropical marine waters, often associated with estuaries and mangrove forest. They also occur far upstream in the Ayeyarwady (formally Irrawaddy) river system of Myanmar, Makhakam river of Indonesia, and Mekong river system of Loa, Cambodia, and Vietnam.

At present, composition of abundant of cetacean species in the Southeast Asian waters are still not clear. Most of cetacean research has been conducted based on the field observation, and dead specimens recording at shore. Not many research works has been conducted by sighting survey. With regards to the survey plan of SEAFDEC research vessels in the Southeast Asia waters, cetacean species such as dolphin and whale were often found by sighting. Every year, more than 5,000 nm the research vessel, namely MV SEAFDEC2 has sailed to many sea areas in the region. In order to collect scientific information on the distribution and composition of cetacean species in Southeast Asian waters, the cetacean research by SEAFDEC was initiated since 2008.

2. PROGRAM

2.2 Objectives

- 1) Inventory of all cetacean namely whale and dolphin found in the Southeast Asian Waters through the whale sighting program using SEAFDEC research vessels;
- 2) Information gathering of the accidentally death of cetacean on the coastal area of the region;
- 3) Information gathering of the whale sighting program existed in the Southeast Asian countries;
- 4) Enhancement of the human resources capacity on the cetacean research works in the region; and
- 5) Dissemination of the species distribution in relation to the coastal and marine habitat/ecosystem in the Southeast Asian waters.

2.3 Program description

Information and data collection of the cetacean species existing in the Southeast Asian waters will be conducted; based on the sighting survey onboard SEAFDEC's research vessels together with the other existing data/information available.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
Workshop/Consultation Visit and Preparatory Works on Whale Sighting Program	July	100% Completed The 1 st Regional Workshop on Information Gathering and Cetacean Research in the Southeast Asian Waters was organized from 30-31 July 2009 at the Training Department.
Information Gathering and Actual Survey by Research Vessels	August	100% Completed Information collection onboard cetacean sighting program by using MV SEAFDEC2, and MV Chulabhorn research vessels.
Data Analysis and Information Dissemination	Jan to Dec	80% Completed Publication of the proceeding of the 1 st workshop was produced.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

4.1 Planning of the Project Activities

Project/Activity Title	Duration
Workshop/Consultation Visit and Preparation Work Organization of the 2 nd Workshop on Information Gathering of the Cetacean Research in the Southeast Asian Waters. Consultation visit or participation to the relevant initiatives.	Aug
Information Gathering/Collection and Actual Survey Continuation of the information collection onboard cetacean sighting program by using SEAFDEC's research vessels or other research vessels on cetacean abundance and death. Review available documents/references related to the cetacean research.	Jan to Dec
Data Analysis and Information Dissemination Publication of the review documents, and the proceeding of the report of the 2 nd Workshop.	July to Dec

4.2 Expected Outcomes

- 1) Inventory of cetacean species including whale and dolphin found in the Southeast Asian Waters through the whale sighting program using research vessels of SEAFDEC and other research vessels;
- 2) Information gathering through the cetacean sighting programs/initiatives in the Southeast Asian Countries;
- 3) Information gathering on the death of cetacean on the coastal areas of the region;
- 4) Enhancement of the human resources capacity on the cetacean research work in the region; and
- 5) Information dissemination of the cetacean species and their distribution/abundance in relation to the habitat and coastal ecosystem in the Southeast Asian Waters.

PROGRAM DOCUMENT

Program Category: Other Programs
Program Title: Promotion of Sustainable Freshwater Aquaculture for Rural Communities
Lead Country: Thailand
Lead Department: The Secretariat
Total Duration: 2009

1. INTRODUCTION

Freshwater aquaculture has been practiced in Southeast Asia for centuries providing livelihood to rural people and ensuring sustainable supply of fishery products to the local populace and food security. Considering that the rural poor people generally lack access to appropriate technology, information, capital and inputs for livelihoods, community-based aquaculture has been identified as an approach to look into their collective needs and aspirations using aquaculture as a source of food and livelihood to elevate their socio-economic conditions.

To assist the countries in Southeast Asia in developing rural freshwater aquaculture, a project on the “Promotion of Sustainable Freshwater Aquaculture for Rural Communities” has been initiated by SEAFDEC with funding support from the Japanese Trust Fund. The project aimed to address important role of freshwater aquaculture in providing means of livelihoods and ensuring sustainable food supply to the people particularly in the remote rural areas of Southeast Asia.

The project has been implementing in collaboration with ASEAN, the Department of Livestock and Fisheries (DLF) of Lao PDR, the Department of Fisheries (DOF) of Thailand, Mekong River Commission Fisheries Programme (MRC-FP), the World Wide Fund for Nature (WWF) in Lao PDR, and the Asian Institute of Technology (AIT). The project focuses on the promotion of appropriate aquaculture systems that could be applied in remote rural areas in Southeast Asia where most people have long been ignored due to their isolation from the most basic infrastructures. This will be done through capacity building by promoting exchange of experiences, developing the capabilities of the countries’ key extension staff, mobilizing expertise in the region, and sharing of experiences on rural freshwater aquaculture.

A Regional Training on “Community-based Aquaculture for Remote Rural Areas of Southeast Asia” was identified as a major activity under the project. The Joint Regional Training on Community-based aquaculture for Remote Rural Areas of Southeast Asia was successfully organized in Lao PDR in 2007 and 2008. The training was able to test, developed, and refined the Handbook and Reference materials for Community-based Aquaculture for Rural Development in Southeast Asia as well as Reports of discussion and fieldwork practices on issues and consideration for successful community-based aquaculture for rural development. All of these training outputs will be published and disseminated as a future regional reference on the topic.

Based on the training conducted in 2007 and 2008, the participants expressed their satisfaction to the training arrangement and indicated that their expectations were fulfilled, in terms of satisfaction on the course content and resource persons, the training methods, materials and facilities, appropriateness and practicability of subject content, and field practical session. In addition, it was commended that joint organization of the training among various organization was good and should be supported and this is the effective way of learning and sharing of information. Finally, it was recommended that areas of future projects by SEAFDEC on community-based aquaculture for remote rural areas of Southeast Asia to have echo regional training once a year and again in 2009 with more time allocated for the field practical session and exchanging of experiences through the Workshop.

2. PROGRAM

2.1 Objectives

Most of the poor farmers in Southeast Asian countries are located in remote rural areas, far from cities and infrastructure, and they depend almost exclusively on agriculture and natural resources, especially aquatic, while being deprived of most services. Those farmers are usually disadvantaged in terms of access to services, resources and limited infrastructure. In this basis, the project will focus on promoting means for those people to make their entry into aquaculture by promoting community-based fish farming/aquaculture and integration of aquaculture with agriculture, effectively aiming to achieve:

- 1) Improvement of human nutrition and food security
- 2) Reduction of vulnerability and risk of rural households or poverty alleviation
- 3) Equitable income and employment
- 4) Participation and empowerment of villagers in managing their resources, with a better utilization of the village resources
- 5) Reduction of requirements for physical labour and empowerment of women

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Project/Activity Title	Duration	Remarks
<p>Activity 1: Preparatory Meeting for a Joint Regional Training on Community-based Aquaculture for Remote Rural Areas of Southeast Asia</p> <p>- The Preparatory Meeting for the Third Joint Regional Training on Community-based Freshwater Aquaculture for Remote Rural Areas of Southeast Asia, was conducted at DLF in Vientiane, Lao PDR from 5-6 February 2009. This is to discuss and confirm the collaboration with DLF and other partner agencies in Lao PDR. The Meeting agreed and confirmed collaboration and support from all partner agencies including DLF, Lao PDR, MRC Fisheries Programme, AIT/AOP, WWF Lao PDR, LARReC. The Meeting also concluded the training venue and input from partner agencies. The Meeting recommended to have another Meeting to discuss detailed curriculum of the training.</p>	Feb.	100% Completed
<p>Activity 2: Preparation of training materials and venue</p> <p>-Follow-up from the agreement among SEAFDEC and partners agencies at the Preparatory Meetings in February, the Second Preparatory Meeting was conducted from 22-23 June at DLF, Vientiane, Lao PDR to discuss the curriculum development, finalized input from all partner agencies, resource persons, preparation and arrangement of training venue, sites for field visit and practices and the arrangement, and training materials. For field sites visit and practices in Thailand, as well as resource persons from DOF Thailand, inputs and training materials, coordination for preparation and arrangement were prepared through coordination and collaboration with resource persons during February to June 2009</p>	Feb.-Jun.	100% Completed
<p>Activity 3: A Joint Regional Training/Workshop on Community-based Aquaculture for Remote Rural Areas of Southeast Asia</p> <p>- The eleven-day Joint Regional Training on Community-based Freshwater Aquaculture for Remote Rural Areas of Southeast Asia was conducted in Lao PDR from 7 to 17 July 2009, with 3 days field sites visit and practices in Thailand. The participants were aquaculture extension officers from 8 ASEAN Countries for 22 persons (SEAFDEC supports 19 persons). The training comprises lectures, practical sessions, demonstration, study visit and group discussion and Special Workshop on Contribution of Fisheries to Food</p>	Jul.	100% Completed

<p>Security mobilizing knowledge and experiences of the partner agencies and of the participants. The Workshop on Contribution of Fisheries to Food Security was organized on 16 July 2009 in Vientiane, Lao PDR, as part of the Training. The Workshop has objectives to: i) Identify the issues/problems and constraints in achieving food security and livelihoods at the local level; ii) Share and exchange experiences on possible ways/approaches to help enhancing food security and livelihoods through fisheries and aquaculture development at the local level; and iii) Develop policy recommendations and identify project ideas to support enhancing food security and livelihoods through fisheries and aquaculture development at the local level. As the outcomes from the Workshop, the Workshop discussed and identified the priority issues and constraints in achieving food security and livelihoods through fisheries and aquaculture intervention at the local level; based on the priority issues and constraints in achieving food security and livelihoods through fisheries and aquaculture intervention, the Workshop discussed and indentified the possible ways/approaches/strategies to tackle the problem/issues; and also developed concept proposals, on: i) Development of technology transfer for remote rural community, and ii) Conducting Training of the Trainers to transfer technology to farmers, outlining the key problems/issues, objectives, goals/outputs, plan of activities, to be considered in the implementation at the national and regional levels. At the end of the Training, the participants have been cooperative and actively participated in training activities. After the training, the participants expressed their satisfaction to the training arrangement and indicated that their expectations were fulfilled and suggested to have continue conducting the training once a year.</p>		
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PROGRAM DOCUMENT

Program Category:	Other Programs
Program Title:	Sustainable Fisheries for Food Security in the ASEAN Region
Project Title:	Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches
Lead Country	Lao PDR, Myanmar
Lead Department	SEAFDEC Secretariat (in collaboration with TD)
Total Duration:	2008-2011

1. INTRODUCTION

Since the adoption of the FAO Code of Conduct for Responsible Fisheries in 1995, SEAFDEC has implemented various activities to promote responsible fisheries in Southeast Asia. Starting with the regionalization of the global code into regional contexts and production of Regional Guidelines for Responsible Fisheries in Southeast Asia from 1998 to 2006 (covering responsible fishing operations, responsible aquaculture, responsible fisheries management, and responsible fisheries post-harvest practices and trade); this was followed by translation of the guidelines to national languages and provisions of HRD activities to support the implementation of responsible fisheries in the region. In addition, the principle of responsible fisheries has also been embedded in SEAFDEC programs of activities from formulation until their implementation.

In June 2007, SEAFDEC was informed of the endorsement by the FAO Council nominating SEAFDEC as the recipient of the Margarita Lizarrága Medal Award for the biennium 2006-2007. This award is given to SEAFDEC for its efforts in promoting the adoption of the Code of Conduct for Responsible Fisheries (CCRF) in the ASEAN Region.

SEAFDEC still further promote the concept of CCRF by implementing on various regional programs. Most of the CCRF implemented programs have focused in the coastal and marine fisheries. Very few programs were implemented in the inland areas remarkably in Lao PDR and Myanmar. Therefore SEAFDEC, using Japanese unspent from MoFA proposes to promote of inland small-scale fisheries management through rights-based fisheries and co-management towards institutional building and participatory approaches concept to those two countries as pilot projects. It is expected that the outcomes from those two pilot countries could be fulfill the gap in implementation of the CCRF, in addition the outcomes could also apply and benefit to all SEAFDEC Member Countries.

2. PROJECT

2.1 Objectives

- 1) To promote the practice of rights-based fisheries and co-management to improve inland small-scale fisheries management in ASEAN Member Countries;
- 2) To strengthen a fishing community organization and its institution to take leading role in practicing rights-based fisheries and co-management for achieving inland small-scale fisheries management;
- 3) To establish sustainable inland small-scale fisheries resource management entity at local levels; and
- 4) To alleviate poverty in inland small-scale fishing communities.

2.2 Program description

The main objectives of the program are to test and demonstrate the community-based co-management for sustainable inland small-scale fishery resources applicability integrated with approach in alleviation of poverty in inland communities. The project deploys pragmatic activities to stimulate and encourage people's participation as well as to build people's capacity for involvement in inland small-scale fisheries resource management and community development. The people's participation is an initial empowerment to contribute to the institution of a local management body to vigorously lead community development and inland small-scale fisheries resource management.

The activity will also focus to the stakeholders for strengthening the fishing community institutional organizations or groups so as for them to understand and enable them to implement the application of inland small-scale fisheries management by using right-based and co-management in fisheries management. In addition, complementary efforts will be exerted aimed at improvement of their lively hood. The project aimed to mobilization of expertise from SEAFDEC Departments and Member Countries into the project site implementation activities.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2009

Activity 1: Case study on the promotion of rights-based fisheries and co-management for strengthening an integrated inland small-scale fisheries management implementation

Activity 1-1: On site base line survey and monitoring

Lao PDR

1) Setting of Fish Conservation Area in Nam Ngeum Reservoir

Since, the recommendation from the Workshop on Discuss and Define Principle, Criteria and Proper Manners for Strengthening Local/Indigenous Institution in Nam Ngum Reservoir on 12-15 October 2009. While, four fishing village namely; Ban Donchai-Udom, Ban Hmai, Ban Hauy Prung, Ban Sangsawang, agreed to establish the village fish conservation area. The workshop member also requested to SEAFDEC for supporting the fish conservation area facilities such as conservation area sign board and marked buoys setting in the villages. SEAFDEC proposed to install the marked buoys in four village fish conservation area during 21-26 December 2009.

Myanmar

1) Establishment of fish conservation area

Southeast Asian Fisheries Development Center (SEAFDEC) in collaboration with the Department of Fisheries, Myanmar was organized the workshop on the establishment of reservoir fish conservative area for sustainability of inland fisheries resources, in Duya Inn, Hinthada Township during 25-29 April 2009. The workshop on reservoir fish conservative area are focusing and considering the establishment of reservoir fish conservative zone in Duya Inn. The workshop also discussed on responsible of local government officers and villagers on establishment of reservoir fish conservative zone and management as activity to follow-up the output of the workshop and to strengthen co-management between government-based agency and village-based society with sharing clear function and responsibility to implement the zone management for sustainability of aquatic resources in the reservoir. During the workshop, the fish conservation area in Duya Inn was declare and fish conservation sign board opening ceremony was presented by Director General of Department of Fisheries Myanmar.

An improvement of fish habitat in the demarked fish conservation area were conducted by installation of artificial habitat improvement material, such as wood, tree branch and fresh water plants. The installed habitat improvement material could be created a nursery and feeding ground for juvenile and bloodstock. The fresh water plants of Water hyacinth and local weed plant in the floating bamboo frame size of 5x5 meters were set up inside the demarked fish conservation area. There are 5 units of floating bamboo frames are install at shallow water depth, 1-2 meters, with observation raft house for preventing of illegal fishing in the demarked fish conservation area.

2) Topographic survey in Duya Inn reservoir for fish conservation area

SEAFDEC TD team, in collaboration with Department of Fisheries of Myanmar has carried out a bottom topographic survey (by using Hydro-acoustic equipments) in Fish Conservation Are in the Duya Inn Reservoir which located in Hinthada District, Ayeyarwady Division during 27 September to 1 October 2009. The aim of this survey was to obtain the information on the reservoir's bottom profile and characteristics, fish school distribution, surface area and volume of the water in the reservoir for the further management and development of fish conservation area and their sustainable exploitation in the future.

Activity 1-2: Workshop/Seminar on rights-based fisheries and co-management for inland small-scale fisheries management with local fisheries officers and stakeholders

Lao PRD

1) The Stakeholder Consultative Workshop on the Revitalization of Protected Areas Conservation in Nam Ngum Reservoir, Vientiane Province, Lao PDR

Southeast Asian Fisheries Development Center (SEAFDEC) collaborated with the Department of Livestock and Fisheries (DLF), Lao PDR to organize the stakeholder consultative workshop on the revitalization of protected areas conservation in Nam Ngum Reservoir at Du Lao Nam Ngum Hydropower Plant Company, Koe Oudom District, Vientiane Province on 25-26 November 2008. The output of the workshop was conclusive draft of activities which based on the results of group discussion on defined problems-solutions and responsible parties. In this connection, management and responsible fisheries activity was given top priority to implement in order to approach the problem of aquatic resource decline in the Reservoir. Under management and responsible fisheries activity, four sub-activities were defined namely 1) establish village zone management; 2) establish conservative zone; 3) define fishing zone; and 4) enhance and rehabilitate aquatic resources to alleviate the issue of aquatic resource deterioration. The workshop agreed that four sub-activities were not new, but they were inactive to implement. To revitalize these activities, government officers of DLF, Vientiane Province committed to carefully consider on regulations on village zone management and conservative zone to reduce social conflict in fishing operation and to achieve sustainable aquatic resources. Meanwhile, village representatives purposed that each village should be responsible for village zone management relied on village self-regulation, sub-committee establishment and monitoring mechanism including evaluation.

SEAFDEC purposed The Stakeholder Consultative Workshop on the Revitalization of Protected Areas Conservation in Nam Ngum Reservoir during 20 March 2009 in Vientiane Province, Lao PDR. The workshop focusing and considering the establishment of village conservative zone and management and to strengthen co-management between government-based agency and village-based society with sharing clear function and responsibility to implement the zone management for sustainability of aquatic resources in the Reservoir. Participants of the workshop are composed of officers from Department of Livestock and Fisheries (DLF) Vientiane Capital, local government officers of Vientiane province, representative of 23 villages of Vientiane province and SEAFDEC/TD staffs. At the end of workshop consulting all villages were recognized the important of the establishment of village conservative zone and management and also agree in

principle on establishment of each village fish conservation area. All village representatives will bring back the issue to consult with the village members for further consideration.

Myanmar

1) Workshop on Fish Conservative Areas for Sustainability of Inland Fisheries Resources in Duya Inn Reservoir

The Workshop on Fish Conservative Areas for Sustainability of Inland Fisheries Resources in Duya Inn Reservoir were conducted in Hinthada Township, Ayeyawaddy Division, Myanmar during 25-29 April 2009. There are 120 participants to join the workshop. Participants were 60 persons who were local people and stakeholders and other 60 persons were local officials both in and outside the Department of Fisheries. The objective of the workshop was to promote sustainable inland fisheries resources conducted through conservative areas. To strengthen the conservative areas activity, all stakeholders and officials delivered their presentations to the workshop. The representative from Myanmar Fisheries Federation confirmed to the workshop that the federation had main policy to promote sustainable fisheries resources and responsible fisheries for long lasting utilization of aquatic resources.

The workshop were concluded that the conservative areas activity had been a practical model to promote rehabilitation and enhancement of inland fisheries resources in lease able fishing areas and natural water sources. The result would be fostered and made extension service to facilitate other fish lease holders and fishers to implement, meanwhile, problems found would be warning point to alleviate improper activity implementation. In addition, the Duya Inn model would strengthen coordination and collaboration between government-based agencies and local community to attain a sustainability of inland fisheries resources.

Activity 1-3: Establish community-bases management groups

Lao PDR

1) Fish Conservation Area Management Group Discussion

Since, the fisheries production from Nam Ngeum reservoir are declining due to many reasons such as over fishing, illegal fishing activities, lack of information on fisheries enhancement and management and regulation on fisheries management defective. Then, the Department of Livestock and Fisheries (DLF) of Lao PDR is need to promote sustainable livelihood and inland resource management through co-management, establish fish conservation zone and improve fisheries management regulation at Nam Ngeum reservoir. SEAFDEC in collaborate with DLF of Lao PDR were organized the Workshop on Discuss and Define Principle, Criteria and Pproper Manners for Strengthening Local/Indigenous Institution in Nam Ngum Reservoir at, Koe Oudom District, Vientiane Province on 12-15 October 2009. The participants of workshop are composed of fisherman from 4 villages, provincial and district fisheries officers from Department of Livestock and Fisheries (DLF), Lao PDR and SEAFDEC staff. The objective of the workshop were to strengthen fishing community organizations and institutions for them to take the leading role in practicing rights-based fisheries and co-management for inland fisheries management and to establish fish conservation zone through co-management at Nam Ngeum reservoir.

The outcome of the workshop consulting were four village namely; Ban Donchai-Udom, Ban Hmai, Ban Haui Prung, Ban Sangsawang, agree to establish the fish conservation area. The workshop member also requested to SEAFDEC for supporting the fish conservation area facilities such as conservation area sign board and marked buoys setting in the villages.

Activity 1-4: Technical transfer and assistance for developing capacity building for local fisheries officer and stakeholder

Lao PDR

1) The Conduct Fish Releasing Activity

Since, SEAFDEC in collaborated with the Department of Livestock and Fisheries (DLF), Lao PDR were organized the stakeholder consultative workshop on the revitalization of protected areas conservation in Nam Ngum Reservoir, Vientiane Province, Lao PDR on 20-21 March 2009. The workshop was focusing and considering the establishment of village conservative zone and management in Nam Ngum reservoir. The output of the workshop was conclusive draft of activities which based on the results of group discussion on fisheries resources conservation area. In order to approach the problem of aquatic resource decline in the reservoir, the meeting was supported the fish restocking activities in Nam Ngum reservoir. SEAFDEC in collaborated with the Department of Fisheries, Thailand and Department of Livestock and Fisheries (DLF), Lao PDR will conduct the fishes seed releasing ceremony at Nam Ngum reservoir on 13 July 2009. The fish fingering will prepare by SEAFDEC and DOF Thailand. There are totally 760,000 individual fish fingering released as follows ; Striped catfish (*Pangasius sutchi*) 60,000 individual, Common silver barb (*Puntius goinonotus*) 400,000 individual, Small scale mud carp (*Cirrhina microlepis*) 200,000 individual, and Jullien's mud carp (*Henicorhynchus siamensis*) 100,000 individual.

Myanmar

1) Training on Fish Processing Product

In order to improvement of fisheries lively hood by means of introduction of fish processing product as alternative source of generating income for local fishermen, SEAFDEC then, organized the Training on Fish Processing Product for two selected fishing village in Hinthada township. There are 10 fisherwomen from women groups of two fishing village namely Bay Chaung and Pauk Yoe village are attained the training program. The training was conducted during April 27-28, 2009 at Duya Inn, Hinthada. Two kind of fish product namely "Fish cracker" and "Fish fried product" were demonstrated to women groups. SEAFDEC delivered the basic equipments for fish product production as well as seed money for fish product production to both women groups for their starting the business.

2) Basic accounting training course

One of the key issue for successful on the local group business is an appropriated financial accounting system. The training on basic accounting system and book record for fish processing product women group were conducted on 21 August 2009. One day training program was performed by Hinthada auditing officer, Daw Khn Ohn Kyu, in local Myanmar language. There are 12 participants from two women group and 2 local coordinating officers of district fisheries office participated in the training course. The course content are composed of Basic Accounting System, book record on General ledger, Daily production and sales record, Daily material procurement record and Summary of account sheet. SEAFDEC provided the accounting book records as well as calculators to all participants for their using during the training course and daily running business.

Project/Activity Title	Duration
Activity 1: Case study on the promotion of rights-based fisheries and co-management for strengthening an integrated inland small-scale fisheries management implementation	
Activity 1-1: On site base line survey and monitoring	
Lao PDR 1) Setting of Fish Conservation Area in Nam Ngeum Reservoir	21-26 Dec.
Myanmar 1) Establishment of fish conservation area 2) Topographic survey in Duya Inn reservoir for fish conservation area	25-29 Apr. 27 Sep. – 1 Oct.
Activity 1-2: Workshop/Seminar on rights-based fisheries and co-management for inland small-scale fisheries management with local fisheries officers and stakeholders	
Lao PDR 1) The Stakeholder Consultative Workshop on the Revitalization of Protected Areas Conservation in Nam Ngum Reservoir, Vientiane Province, Lao PDR	20 Mar.
Myanmar 1) Workshop on Fish Conservative Areas for Sustainability of Inland Fisheries Resources in Duya Inn Reservoir	25-29 Apr.
Activity 1-3: Establish community-bases management groups	
Lao PDR 1) Fish Conservation Area Management Group Discussion	12-15 Oct.
Activity 1-4: Technical transfer and assistance for developing capacity building for local fisheries officer and stakeholder	
Lao PDR 1) The Conduct Fish Releasing Activity	13 Jul.
Myanmar 1) Training on Fish Processing Product 2) Basic accounting training course	27-28 Apr. 21 Aug.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2010

Activity 1: Case study on the promotion of rights-based fisheries and co-management for strengthening an integrated inland small-scale fisheries management implementation

Activity 1-1: On site base line survey and monitoring

In order to achieve the current status of the local community and fisheries resources management in the pilot site for formulate the implementing activities, the on site base line survey will be conducted. The overview information and database to delineate proper activities for sustainable small-scale fisheries resource management and community development, the local demand-led project needs a feasibility study in depth. The base line survey includes topics that rely upon people's idea on management aspects and/or their demand for the proposed activities of the project. The survey identifies a beneficiaries group, supporters and those negatively affected, etc. in the project implementation. Data collection at areas of the project site that rely upon technological, biological and ecological aspects will be carried out as a regular basis survey during the period of the project. A socio-economic survey should also be regularly conducted to understand the social and economic status of the project site. Regular basis surveys provide indicator identification for monitoring and evaluating the project. Information collection from base line survey will be used as input for project site implementation planning in close consultant with responsible fisheries officers.

Activity 1-2: Workshop/Seminar on rights-based fisheries and co-management for inland small-scale fisheries management with local fisheries officers and stakeholders

This activity delivers to community meeting to let the community people itself recognize its own community and practice related to right-based fisheries and co-management, and also restores the research results to community and sharing information between local stakeholders and governmental agencies concerned, this activity is meant to share information among local stakeholders and governmental agencies concerned to recognize each other. The workshop/seminar will enhance users' consensus on the self-regulatory use of fisheries resources and on the reduction of conflict between resource users. Any technical advice and training courses could be prepared by the project according to the demand of users and stakeholders.

Activity 1-3: Establish community-bases management groups

In order to strengthen the substantial factor for the establishment institutional framework at the project site, the project will transfer information and give advice to resources user to take part of the responsibility of co-management by building the awareness of local officers and community leaders. The project will advise and assist resource users to organize community-based management groups of whatever type. They are expected to work as a unit of management. By the users' active participation in the groups, there will be a network of the groups within the project site. For the groups and network to undertake self-management in the demarcated areas, the project will provide necessary advice and technical transfer as regards organization and activities.

Activity 1-4: Technical transfer and assistance for developing capacity building for local fisheries officer and stakeholder

The training workshop will be organized for fisheries officers, fisheries policy maker or people who work in the inland small-scale fisheries sector. The content of the workshop will be based on the right-based and co-management in fisheries which based on the "SEAFDEC Regional Guidelines for Co-management Using Group User Rights for Small-scale Fisheries in Southeast Asia" and accommodate their fisheries management experiences and current situation. The training objective is to promote and provide information of the rights-based and co-management for inland small-scale fisheries management at the national level then fisheries co-management will be defined as a strategic approach to achieve a development of the fisheries sector in the interested country. This training workshop should be ideally taken place after or during implementation of the pilot project in each project site.

4.1 Planning of the Project Activities

Project/Activity Title	Duration
Activity 1: Case study on the promotion of rights-based fisheries and co-management for strengthening an integrated inland small-scale fisheries management implementation	
Activity 1-1: On site base line survey and monitoring	Jan. – Jun.
Activity 1-2: Workshop/Seminar on rights-based fisheries and co-management for inland small-scale fisheries management with local fisheries officers and stakeholders	Jan. – Apr.
Activity 1-3: Establish community-bases management groups	Jan. – Dec.
Activity 1-4: Technical transfer and assistance for developing capacity building for local fisheries officer and stakeholder	Jan. – Sep.



4.2 Expected Outcomes

- 1) Promote the practical implementation of right-based fisheries and co-management to improve inland small-scale fisheries management in ASEAN Member Countries;
- 2) Improvement of fisheries livelihood;
- 3) Achieve the community-based co-management for sustainable utilization of inland fisheries resources; and
- 4) Foster/Strengthen a fishing community organization(s).

OUTLOOK OF THE JAPANESE TRUST FUND (JTF) FOR THE YEAR 2009 AND 2010

1. INTRODUCTION

Trust Fund is a scheme in which a government or private organization gives a fund to an international organization or group, which implements programs or projects in line with its specified objectives. SEAFDEC has been conducting four programs (JTF1, JTF2, JTF3 and JTF4) using Trust Fund from the Fisheries Agency of Japan (JTF) so far.

In 2009, Programs of JTF II, JTF III and JTF IV have been being conducted, while JTF III and JTF IV will be terminated this year.

In 2010, the new JTF V program will start replacing JTF IV in addition to JTF II.

(1) JTF II: Promotion of Sustainable Use of Shared Stocks in Southeast Asia (Year 2002-2012)

(Objective)

To promote efficient use of migratory species and support promotion of sustainable fisheries through information collection for sustainable pelagic fisheries, development of demersal fisheries resources, fishery management of shared stock, research for safety of fisheries products and information collection about international fisheries issues.

(2) JTF III: Project for Supporting Establishment of Sustainable Regional Fisheries Systems in Southeast Asia (Year 2003-2007(~2009: for follow-up activities))

(Objective)

To support establishment of sustainable regional fisheries systems in Southeast Asia through technical support of environment related task in the region and better utilization and harmonized information of fisheries management and through publication to enhance awareness of SEAFDEC activities.

(3) JTF IV: Environment-friendly Regional Development in Southeast Asia (Year 2004-2009)

(Objective)

To promote environment-friendly regional development in Southeast Asia through technical supports for resource conservation, environment friendly aquaculture and fishing community development in focussing on relationship between fisheries and environment.

(4) JTF V: Promotion of Sustainable Aquaculture and Resource Enhancement in Southeast Asia (Year 2010-2014)

(Objective)

To support the food stable supply and the poverty reduction in Southeast Asia through technical support for coastal resource recovery by rehabilitation of habitat environment, seed release and preservation of resource, and through promotion of region-oriented aquaculture and safety of aquaculture products.

Remarks) The above-mentioned year is SEAFDEC Implementing Year

2. JTF PROGRAMS 2009

2.1 JTF II

JTF II PROGRAM FOR THE YEAR 2009		
Component / Project	Responsible Departments	Remark
1. Information Collection for Sustainable Pelagic Fisheries in the South China Sea and Andaman Sea		
1.1 Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea	MFRDMD/TD	
1.2 Development of Regional Database for Fishery Management	TD/MFRDMD	
2. Development of Demersal Fishery Resources Living in Untrawlable Fishing Ground in the Southeast Asia Waters		
2.1 Deep Sea Fisheries Resources Exploration in the Southeast Asia	TD/MFRDMD	
2.2 Information Collection for Economical Important Species: as Surimi Materials	TD	End 2009
2.3 Sustainable Utilization of Potential Fisheries Resources & Reduction of Post-harvest Losses	TD	
3. Fishery Management of Shared Stocks in Southeast Asia Waters		
3.1 Information Collection of Highly Migratory Species in the Southeast Asia Waters	SEC	
3.2 Promotion of Right-based Fisheries and Co-management towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management	TD	
4. Research for the Safety of Fisheries Products in the Southeast Asia		
4.1 Chemical and Drug Residue in Fish and Fish Products and their Environment	MFRD	
4.2 Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries	MFRD	End 2009
5. Information Collection about International Fisheries Issues		
5.1 Assistance of Capacity Building in the Region to Address International Fisheries Related Issues	SEC	
5.2 Cetacean research in Southeast Asia Waters	TD	
GRAND TOTAL	Total 11 projects	

2.2 JTF III

JTF III PROGRAM FOR THE YEAR 2009		
Component / Project	Responsible Departments	Remark
1. Environmental Related Task in Southeast Region		
1.1 Management of Fisheries and Utilization of Sharks and Research on Sea Cucumbers in Southeast Asia	SEC	Some activities continue under TF2 in 2010
1.2 Responsible Fisheries Technologies and Practices	TD	Some activities continue under TF2 in 2010
2. Publication to Enhance Awareness of SEAFDEC Activities on Sustainable Fisheries		
2.1 Publication of the Special Publication Fish for the People	SEC	End 2009
3. Towards Better Utilization and Harmonized Information for Fisheries Management in Southeast Asia		
3.1 Towards Better Utilization and Harmonized Information for Fisheries Management in Southeast Asia	SEC	Some activities continue under TF2 in 2010
GRAND TOTAL	Total 4 projects	

2.3 JTF IV

JTF IV PROGRAM FOR THE YEAR 2009		
Component /Activity	Responsible Departments	Remark
Resources Conservation Program: Research and Development (R&D) of Stock Enhancement for Species under International Concerns		
1 Stock Enhancement for Threatened Species of International Concern	AQD	Some activities continue under the TF5 in 2010
2 Research for Stock Enhancement of Sea Turtle	MFRDMD/TD	Some activities continue under the TF5 in 2010
Environment Friendly Aquaculture & Fish Disease Program: Development of Fish Disease Surveillance System & Promotion of Sustainable Aquaculture		
1 Development of Fish Disease Surveillance System	AQD	Some activities continue under the TF5 in 2010
2 Promotion of Sustainable Aquaculture for Rural Communities	SEC	Some activities continue under the TF5 in 2010
3 Development of Technologies and Human Capacity Building for Sustainable Aquaculture	AQD	Some activities continue under the TF5 in 2010
Fishing Community Development Program: Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty		
1 Capacity Building of Human Resources for participation in Integrated Coastal Resources Management	TD	End 2009
2. Promotion of Set-Net, an Eco-friendly Fishing Gear for Sustainable Coastal Fisheries Management	TD	End 2009
GRAND TOTAL	Total 7 projects	

3. JTF PROGRAMS 2010

3.1 JTF II

JTF II PROGRAM FOR THE YEAR 2010		
Component / Project	Responsible Departments	Remark
1.Information Collection for Sustainable Pelagic Fisheries in the South China Sea and Andaman Sea		
1.1 Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea	MFRDMD/TD	
1.2 Development of Regional Database for Fishery Mngagement	TD/SEC	
2.Development of Demersal Fishery Resources Living in Untrawable Fishing Ground in the Southeast Asia Waters		
2.1 Deep Sea Fisheries Resources Exploration in the Southeast Asia	TD/MFRDMD	
2.2 Sustainable Utilization of Potential Fisheries Resources & Reduction of Post-harvest Losses	TD	
3.Fishery Management of Shared Stocks in Southeast Asia Waters		
3.1 Information Collection of Highly Migratory Species in the Southeast Asia Waters	SEC	
3.2 Promotion of Right-based Fisheries and Co-management towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management	TD	
4.Research for the Safety of Fisheries Products in the Southeast Asia		
4.1 Chemical and Drug Residue in Fish and Fish Products and their Environment	MFRD	
5.Information Collection about International Fisheries Issues		
5.1 Assistance of Capacity Building in the Region to Address International Fisheries Related Issues	SEC/TD	
5.2 Cetacean research in Southeast Asia Waters	TD	
GRAND TOTAL	Total 9 projects	

**3.2 JTF V**

TFV PROGRAM FOR THE YEAR 2010		
Component / Project	Responsible Departments	REMARK
1.Promotion of Sustainable and region-oriented aquaculture		
1.1 Promotion of Sustainable and region-oriented aquaculture	AQD	New project
2.Promotion of "Environment-friendly resource enhancement"		
2.1 Resource enhancement of international threatened and over-exploited species in Southeast Asia through atock release	AQD	New project
2.2 Research and Management of Sea Turtles in Foraging Habitat in the Southeast Asia Waters	MFRDMD/TD	New project
3.Preservation of vritical fishing ground		
3.1 Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds through Resources Enhancement	TD	New project
4.Food safety of Aquaculture Products		
4.1 Traceability systems for Aquaculture Products in South Asian Region	MFRD	New project
4.2 Accelerating awarens and capacity-building in fish health management in Southeast Asia	AQD	New project
4.3 Food safty of Aquaculture Products in Southeast Asia	AQD/MFRD	New project
GRAND TOTAL	Total 7 projects	

Annex 8

ENHANCING ASEAN PLUS THREE (APT) COOPERATION IN FISHERIES THROUGH SEAFDEC



Enhancing ASEAN Plus Three (APT) Cooperation in Fisheries through SEAFDEC

32nd SEAFDEC Program Committee Meeting
16-18 November 2009
Kota Kinabalu

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APT Cooperation Overview

- ◆ APT Cooperation
 - * ASEAN Member States, China, ROK and Japan
 - * Established in 1997 and covers various areas (e.g. finance, economic, social, environment, political)
 - * Food security, agriculture and fisheries are among priority areas
 - * Guided by the Second Joint Statement on East Asia Cooperation, and the ASEAN Plus Three Cooperation Work Plan (2007-2017)

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2

APT Cooperation Overview

- ◆ Areas of cooperation in fisheries
 - * Forge closer cooperation in agriculture – **R&D, technology transfer**, agricultural infrastructure, **post-harvest technology, fisheries and aquaculture**,
 - * Cooperate in strengthening **agricultural markets to enhance accessibility** of ASEAN agricultural products into global markets,
 - * Enhance **capacity-building** and human resources development in areas of agriculture
 - * Cooperate in **food security**, including exchange of information on major food commodities, food handling or food safety,

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APT Cooperation Overview

- ◆ Areas of cooperation in fisheries
 - * Cooperate on **fisheries products** development and promotion schemes, and
 - * Promote regionalization of the **code of conduct for responsible fisheries**.
- ◆ Responsible Body
 - * ASEAN Plus Three Ministers on Agriculture and Forestry (AMAF+3)
 - * Senior Officials Meeting (SOM) for AMAF+3
 - * Mandatory reporting to APT Summit through APT Foreign Ministers

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ASSP Program

- ◆ ASEAN-SEAFDEC Cooperation
 - * FCG established in 1999
 - * ASEAN-SEAFDEC Strategic Partnership (ASSP) formalised in 2007
- ◆ ASSP Program
 - * Core component of ASEAN program on fisheries
 - * Recognised support from JTF
 - * From “collaborative projects” to “strategic collaborative program”

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APT Cooperation and SEAFDEC

- ◆ 9th AMAF+3, 11 November 2009, Brunei Darussalam
 - * Endorsed Japan's project on **Promotion of Sustainable Aquaculture and Resource Enhancement in Southeast Asia** with the aims to promote recovery of coastal fishery resources and ensure sustainable aquaculture in the region.
 - * SEAFDEC would be engaged as a main implementing agency over the implementation period of 2010 - 2014. The allocated budget for the project is US\$ 780,000 (JTF-V).
 - * SOM-9th AMAF recommended that project details be discussed at the 12th FCG/ASSP meeting and report the progress and outcome in future meetings.

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APT Cooperation and SEAFDEC

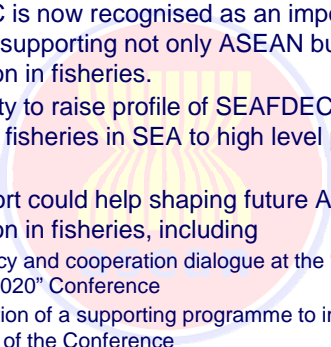
- ◆ 9th AMAF+3, 11 November 2009, Brunei Darussalam
 - ★ Welcomed the proposal by SEAFDEC to utilize the “Fish for the People 2020” Conference as a venue for APT policy and cooperation dialogues on fisheries



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Concluding Notes

- ◆ SEAFDEC is now recognised as an important partner in supporting not only ASEAN but also APT cooperation in fisheries.
- ◆ Opportunity to raise profile of SEAFDEC and JTF support to fisheries in SEA to high level policy makers
- ◆ JTF support could help shaping future APT cooperation in fisheries, including
 - ★ APT policy and cooperation dialogue at the “Fish for the People 2020” Conference
 - ★ Formulation of a supporting programme to implement the outcome of the Conference



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Concluding Notes

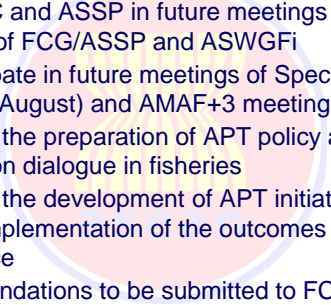
- ◆ ASEC is tasked to coordinate, assist and report the implementation of APT cooperation.



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Proposed Consideration by SEAFDEC (including JTF)

- ◆ To include a summary report on JTF support to SEAFDEC and ASSP in future meetings of meetings of FCG/ASSP and ASWGFi
- ◆ To participate in future meetings of Special SOM-AMAF+3 (August) and AMAF+3 meeting (October)
- ◆ To lead in the preparation of APT policy and cooperation dialogue in fisheries
- ◆ To lead in the development of APT initiatives to support implementation of the outcomes of the Conference
- ◆ Recommendations to be submitted to FCG/ASSP



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10

REVIEW OF SEAFDEC PIPELINE PROJECTS

1. INTRODUCTION

In response to the policy change of annual contribution from the Member Countries to SEAFDEC, the Center's programs of activity starting from the year 2007 and onwards will be funded from irregular funding sources. The paper attempts to review progress and efforts by the Secretariat and the Departments in developing project proposals for funding and/or partnership arrangement.

2. SEAFDEC PIPELINE PROJECTS

Based on on-going preparation and negotiation with donor/partner agencies, the following are current status of the pipeline projects:

Islamic Development Bank (IDB)

- Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management (2010-2012?)

ASEAN

- Climate Change and its Impacts on Fisheries and Aquaculture: Adaptation and Mitigation towards Food Security (2010-2012)
- Promoting Sustainable Food Production through Responsible Fishing Technologies and Practices (2010-2012)
- Strengthen Food Security Arrangements through Fisheries Intervention: Strengthening National and Local Governments in the development of Food Security Programs/Initiatives (2010-2012)

SEAFDEC (Japanese Unspent Fund)

- Safety at Sea for Small Fishing Boats (2010)

UNEP/GEF/SCS

- Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand (2010-2014)

EU

- Improved fisheries management through an ecosystems approach to fisheries by development and management of refugia and Marine Protected Areas in the Eastern Gulf of Thailand

3. SUGGESTED ACTIONS BY THE COMMITTEE

The Committee is invited to consider the progress of pipeline projects and where appropriate provide comments for further development and finalization of the projects with respective donors or partner agencies.

Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management (SEC/IDB)



ASEAN Cooperation Project Document

Project Purpose Code:

Project Title: Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management

Project Description: This project aims to improve the socio-economic status of the coastal dwellers through community fisheries organization and governance in order that the coastal resources utilized by the fishers could continue to sustain its function as the local livelihoods and source of food for the region's fishing communities. The target beneficiaries of this project are the Muslim communities in the region's coastal areas.

Sponsoring ASEAN Body

Sectoral Committee/Main Body: ASEAN Sectoral Working Group on Fisheries (ASWGF)

Meeting Number/Date:

Working Group/Sub-Committee:

Meeting Number/Date:

Proponent's name and address: Southeast Asian Fisheries Development Center (SEAFDEC)

Date of preparation: 16 January 2009

Proposed funding source: Islamic Development Bank (IDB)

Project budget

Description	Total Allocation (\$)
1. Contracts with Individuals	_____
2. Contracts with Organizations	_____
3. Equipment	_____
4. Supplies and Services	_____
5. Travel and Per diem	_____
Total:	250,000

Information below to be completed by the PCU

Recommendation of Secretary-General/Project Appraisal Committee

PAC Meeting Number/Date:

Endorsements:

Approval of ASEAN Standing Committee

Meeting Number/Date:

Endorsements:



ASEAN Cooperation Project Document Format

1. Problem to be addressed

The first paragraph of the Project Document will define the problem (s) that the project will address. This section should be limited to a brief statement of the problem, as determined in the problem analysis. In general, one project should focus on one large problem. The statement of a single problem will lead to the statement of a single objective.

The coastal areas in the Southeast Asia provide the means of livelihood to the coastal dwellers, where hundred thousands of coastal families are directly engaged in fishing activities and coastal aquaculture including related activities such as fish processing, marketing, boat building, net making, etc. The fishers' over-dependence on the coastal fisheries resources has however, led to over-exploitation and degradation of the resources. The conflict on the multiple resource use also threatens the livelihood of coastal fishing communities. Moreover, the recent devastations caused by natural disasters hamper the vulnerability of these communities. Impacts of climate change also add complexity to the problems that they are encountering. Many fisher communities seem to be isolated and/or insufficient benefit from government services net systems that may exist in other areas of the country. In addition, the communities have to pay more for fuel, food and services, while the income from their products is an inverse. These problems brought about unsustainable use of fishery resources, by reason of the fisher communities have to continuously intensify their fishing efforts to maintain their livelihoods.

2. Background, problem analysis and justification

a. Background

The Background section of the Project Document should provide factual information about the context of the problem that is to be addressed. This section should also include description of the present situation, any related current and past ASEAN activities, and the relevant ASEAN policies and plans of action.

The Southeast Asian region is home to the largest Muslim populations in the world (estimated to be about 240,000,000 in 2007), which is almost one-half (about 42%) of the region's total population (in 2007: 571,337,070) with Indonesia having the world's biggest Muslim population (88% of its total population of 225,000,000). Most of the Muslim communities are in coastal areas with fishing as an ethnic occupation. Since the region's coastal fisheries resources, once viewed as inexhaustible source of fish protein for human consumption have deteriorated, concerns have therefore increased for the protection and conservation of the coastal resources for sustainable livelihoods and food security of the coastal dwellers.

The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: "Fish for the People" (hereafter refers to "the Millennium Conference) held in Bangkok from 19 to 24 November 2001, recognized the importance of sustainable fisheries for food security and the livelihoods and well-being of the ASEAN people. The Conference was successfully concluded by the adoption of "*the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region*" by the fisheries related ministers and senior officials of ASEAN-

SEAFDEC Member Countries as the regional common fisheries policy and priority actions.

Within the regional context, fisheries sector is being addressed among other priorities to accelerate the regional economic integration as spelt out in the **ASEAN Vientiane Plan of Action** as well as regional collaboration in promoting sustainable fisheries development through the ASEAN-SEAFDEC Fisheries Consultative Group Mechanism under the recently adopted **ASEAN-SEAFDEC Strategic Partnership Program (FCG/ASSP)**.

Most of the coastal fisheries communities in the ASEAN Region are characterized as small-scale fisheries. The production from small-scale fisheries contributes to national economic growth. Nevertheless, the endowment, potential, and resilience of the small-scale sub-sector have not been recognized and highlighted, while it is immensely contributed to resource utilization. This critical issue should also be addressed along line with the **ASEAN Socio-Cultural Community (2008-2015)** that the region's aspiration to lift the quality of life of its peoples through cooperative activities that are people-oriented and environmentally friendly geared towards the promotion of sustainable development.

In addition, the coastal dwellers are also prone to the drastic change of coastal environment. In December 2004, coastal communities in Indonesia, Thailand, Malaysia, and Myanmar had to suffer from the great loss of lives and assets due to the unprecedented scale of earth quake and Tsunami. Such large-scale natural disaster further aggravated their poverty status of the people in the areas. In respond to the tragic incident, ASEAN community adopted "**ASEAN Declaration on Action to Strengthen Emergency Relief, Rehabilitation, Reconstruction and Prevention on the Aftermath of Earthquake and Tsunami Disaster of 26 December 2004**" as their policy commitment to support Tsunami affected people. The coastal villages throughout the region are also facing hardships due to the impact from climate change such as sea level rise, increase of sea temperature, change of fish habitat and its ecosystem, natural hazards, etc. The ASEAN-SEAFDEC Member Countries have put a serious concern on this issue and recently identified the **required adaptive measures and activities to mitigate the impacts of climate change** to be undertaken by SEAFDEC and the national agencies responsible for fisheries in the Member Countries. In addition, Indonesia as the lead country also prepared a proposal on the **ASEAN Strategy Addressing the Impact of Climate Change on Agriculture, Forestry and Fisheries**, for further submission to the SOM-AMAF.

Since the enhancing of coastal fisheries communities' resilience is involved with various cross cutting issues and required strong commitment and coordination from national government, organizations, local institutions, this project is therefore proposed in order to improve livelihoods of the Muslim coastal dwellers, who is the majority of coastal population, through community fisheries organization and governance in order that the coastal resources utilized by the fishers could continue to sustain its function as the source of food and provide means of livelihood for the region's fishing communities. The target beneficiaries of this project are the Muslim communities in the region's coastal areas.

b. Problem analysis and justification

The Problem Analysis and Justification section is the most important section of the Project Document. The section should present a logical analysis that justifies regional action by ASEAN. The section should discuss the following topics and questions:

Problem analysis What are the underlying causes of the problem to be addressed? Details from the problem analysis should be presented here.

Fishing related coastal communities often demonstrate high levels of vulnerability, many small-scale fishing families are increasingly caught in a poverty trap. This situation could be reasoned from a

variety of factors including dependence on dwindling coastal resources, unpredictable nature of fishing, high occupational risk, sensitivity to macro-economic changes, exposure to natural disasters, high competition from multi-resource users; and social, economic and political marginalization.

The growing domestic and international demand for fish and fish products has resulted in the excessive exploitation of aquatic resources in the region. The number of small fishermen keeps increasing; the size and number of coastal villages are becoming larger and larger. Whenever the fishery resources are threatened, it is definitely impact to the Muslim coastal communities where their livelihoods depend very much on coastal resources. The local income of coastal fishery communities

and people involve in fisheries associated activities (*i.e.* fish processing, marketing, boat building, net making, etc.) are determined by coastal resources for a significant part of their livelihoods. The fishermen have to compete with both people and natural resources, the fishermen therefore continuously intensify their fishing efforts to maintain a status quo. This leads to the tragedy of resources utilization which the fishermen are driving resources down both in terms of quality and quantity; and they will be finally caught in a poverty trap.

Apart from the degradation of fishery resources, biophysical and socio-economic condition in the coastal zone is highly vulnerable to the impacts of climate change and natural such as erosion, cyclone, sea-level rise, increases in sea-surface temperature and unpredictable effects of climate change on the coastal environments changes (*i.e.* natural hazards, resources productivity, degradation of habitat and ecosystem, etc.). These climate change-related stresses could increase risk of coastal fisheries communities and effect to the development of fisheries more difficult in improving people livelihood and ensuring food security as well as addressing on fisheries management approach. These could bring about degeneration of economic well-being, risk in safety and efficiency of fishing operation, lost of fish caught, as well as implication on employment and vital source of protein for poor people. To assist the fisheries communities from these subsequences, there is a need to build up community resilience in coping with such cases.

Coastal dwellers are facing degradation of fishery resources, at risk of natural disaster, dealing with low standard of living and poverty. Many fisher communities are outside of any social safety net systems that may exist in other areas of the country. Thus, the need to strengthen community fisheries organization and capacity building for better development and management of the coastal resources to ensure sustainable livelihood of coastal communities, has become very urgent. It is indeed important that appropriate coastal resources management, alternative livelihoods as well as research and development for simple early warning system at local community level should be put in place.

This project aims to improve the socio-economic status of the coastal dwellers through community fisheries organization and governance in order that the coastal resources utilized by the fishers could continue to sustain its function as the source of food for the region's fishing communities. The target beneficiaries of this project are the Muslim communities in the region's coastal areas.

Regionality Is the problem regional in nature? Can the problem and its causes be effectively and appropriately addressed at the regional level? Answers to these questions derived from the regionality analysis exercise should be presented here.

As aforementioned the ASEAN region is home to the largest Muslim populations in the world, majority of occupation in the Muslim coastal communities is mostly characterized by small-scale fisheries and associated activities. It is noteworthy that the role of small-scale fisheries has contributed to the large amount of fisheries production within the fisheries sector. It is also recognized that fisheries play and important direct role in livelihoods, food security, national economic growth and foreign exchange earnings. The Member of ASEAN Countries, main exporters of fish products to the



world market, is unquestionably count upon the production from coastal communities. Degradation of fishery resources, impacts of climate change, global economic crisis in 2008 and vulnerability of the coastal communities could bring about the retard of national economic growth and would be more difficult to strengthen regional economic integration by fisheries sector.

The ASEAN Member Countries should address the issue and build up firm foundation for coastal community through policies and institutions as well as local levels of governance of natural resources utilization to ensure effective co-management between the local government and the communities. The most of the projects have usually been implemented as national programs with appropriate national policy. However, if the program is appropriately focus on the issues and to facilitate exchange of experiences among the participating countries (regional approach) and to develop the common stand and concerns on the subjects may greatly promote the issues in the region.

Participation Which ASEAN Member Countries want to participate in this project?

For the project implementation, high priority will be given to ASEAN countries with the highest Muslim populations, such as Indonesia, Malaysia, and Brunei Darussalam (88%, 59% and 67% Muslim populations, respectively). Other Muslim communities in the Philippines, Thailand and Cambodia will also be involved in the project implementation through technology transfer and dissemination of experiences learned from the three priority countries considering their respective problems and needs.

Beneficiaries Who will be the likely beneficiaries of a solution to the problem or need?

The direct beneficiaries are the people in the eight selected coastal Muslim communities in ASEAN region. Communities will be selected based on criteria identified by the project. In order to support capacity building activities, approximately 160 fishers, 25 local fishery officers and other personnel working in support of fishery communalities will be involved in the project activities. On the other hand, experiences and lesson learn during the conduct of project activities and outcomes of the project implementation could be useful for strengthening of national policy in supporting coastal fisheries communities in respective ASEAN Member Countries.

Commitment and sustainability What complementary national actions are interested member Governments currently implementing to address the problem or would be needed along with regional action to fully address the problem? Are the concerned ASEAN member Governments committed to bearing the costs of required complementary national actions and the long-term costs of regional action?

Project implementation requires strong commitment to achieve the objectives and activities of under the project both at national and local levels. National fisheries related agencies are requested to provide in-kind contribution and keep close collaboration with SEAFDEC to facilitate the project implementation, especially coordination with stakeholders, and also ensuring that the implementation of the project would along line with national instruments. Financial contribution from national government will be only required in extraordinary cases which could not be covered by the project. The identified future follow-up activities based on the outcomes of the project should be follow-up by respective national governments to maintain sustainability of the project promotion.

3. Possible solutions

The purpose of the Possible Solutions section of the Project Document is to ensure that alternative strategies or approaches to solving the project problem have been identified and assessed. What possible approaches to the problem were identified in the problem analysis? Are there other possibilities? What are the advantages and disadvantages of pursuing each option? What would be the consequences of doing nothing? What strategy has been selected as the best approach to solve the problem? Why is this option regarded as the best approach?

Coastal communities are highly dependent on fishing for their livelihoods with fewer possibilities to generate alternative source of income. They are thus a strong potential group to risk to the resource base and habitats. Declining of fish stocks due to over fishing lead to lower production, while increasing competition and conflict between different users. It is widely recognized that not only improving coastal fisheries management that important but also controlling the effects of human

activities on the environment are necessity. Linkage between sustainable environment and sustainable livelihoods is a direct variation. Past and present, there are the areas that solve the problems by centralized management and it has proved of ineffective results. There is a growing trend towards a more decentralization of governance in general as well as in fisheries management. Management responsibilities are to share among national government, local organization and institutions, communities and other stakeholders. This type of so called 'co-management system' are becoming popularity and have been successfully implemented in some countries in ASEAN.

To address the issues and problems in coastal communities, policies and institutions in respective ASEAN Member Countries need firm foundation in coastal communities and local levels of governance of natural resources utilization to ensure effective co-management arrangements between the local government and the communities. This has to be coupled with capacity building of communities and local organizations on participatory, inter-disciplinary and community-based strategies in community organization as well as the transfer and adoption of knowledge-based coastal resources management and adoption of sustainable resource use technologies and practices.

People participatory approach will be adopted as the fundamental approach for implementing the project. Specifically, the people participatory approach in community-based fisheries management (CBFM) and co-management (CM) will be used as tools in establishing community fisheries organizations and governance. The community fisheries organizations will take the leading role in community development and management of the coastal resources through the adoption of top-down and bottom-up approaches. In considering the bottom-up approach, community fisheries organizations will be self-formulated to implement their own community development and coastal resource management plans. Following the top-down approach, the community fisheries organizations will also adopt the community development and coastal resource management plans and programs formulated by local governments and higher level authorities.

4. Objective and success criteria

a. Objectives

This section of the Project Document, the highest element in the logical framework, should present the best approach as (1) the statement of the results to be achieved by the project or activity (the objective) and (2) the statement of criteria for successful achievement (the success criteria). In other words, the objective should define a desired solution to the identified problem.

The project aims to formulate a practical framework for strengthening and promoting community fisheries and building the capacity of the fishing communities to enable them to organize community economic development activities and sustain their livelihoods in fisheries. Community fisheries organization is a basic and crucial local management body that could lead and function in the promotion livelihood opportunities in fisheries and management of the coastal resource in sustainable and effective ways. Therefore under this project, such community fisheries organizations would be promoted to also take the role as local coordinators for across-sectors' communications among the concerned stakeholders. Such function is fundamental and important to implement the top-down and bottom-up approaches in supporting sustainable livelihood and coastal resource management.

1. establishment of sustainable livelihood opportunities and promotion of coastal resource management particularly in the region's Muslim fishing communities;
2. poverty reduction in fishing communities for food security through promotion of responsible fisheries and coastal aquaculture that is friendly to the environment; and
3. strengthening of the community fisheries organizations in the region's Muslim fishing communities by providing opportunities for community economic development and coastal resource management.

b. Success Indicators

The success criteria will set the *qualitative* standards for successful achievement. These criteria will enable the measurement of the extent of project success. Such measurement will enable the evaluation of the project in terms of the purpose for which it was formulated.

Success criteria can be mainly on the participation of the fishery communities in the activities and its impact on their livelihoods as well as enhance capacity of fishers, and extend to both government and non-government co-operation in ASEAN Member Countries. As the effective implementation of people participatory approach in community-based fisheries management (CBFM) and co-management (CM) at the local level, the firm local governance and institutions can be established to sustain the resource utilization and reduce conflict among resource users. Promote people's participation in organizing community fisheries organizations will be the key to achieve communities' resilience and improvement of livelihoods and coastal resource management. These are especially the participating countries which propose to host the on-site activities. In addition, adoption of technology/initiatives by respective Member Countries, which may lead to strengthening of linkage and working mechanism for local institutions and government, can also be used as a success criterion. The above criteria are parts and puzzles in the long-term achievement improvement of people livelihoods as well as coastal fisheries resources utilization and management in Muslim communities.

c. Success Measures

The success criteria will set the *quantitative* standards for successful achievement. These criteria will enable the measurement of the extent of project success. Such measurement will enable the evaluation of the project in terms of the purpose for which it was formulated.

Enhancing of community resilience and improving livelihoods would be difficult to measure in term of quantity or calculate a monetary value in reality. However, focusing on participatory approach applying in this project could count on the number of people involved in all level of activities under this project.

5. Outputs

Outputs are results or products that are produced and utilized in order to achieve an objective. Several outputs may be necessary to enable the achievement of an objective. The vocabulary chosen to define outputs should describe finished products or completed results, *e.g.*, "a feasibility study" or "trained personnel". This section should list and briefly describe the outputs to be produced for the achievement of each project objective.

The following outcomes are envisaged through the project activities:

1. the region's Muslim fishing communities and other stakeholders undertaking sustainable livelihood activities in fisheries and adopting sustainable coastal resource management
2. the way of life of local people in fishing communities improved and food security specifically in terms of food supply and job opportunities enhanced while the coastal environment is protected and conserved
3. the community fisheries organizations strongly leading the practice of planning and implementing community economic development activities for sustainable livelihood and functioning well specifically in the area of coastal resource management

Log Frame on Project Follow-up, Monitoring and Evaluation:

Activity	Reporting Arrangement	Key Performance Indicators	Plans for Monitoring and Evaluation
Activity 1: Community survey and needs assessment	<ul style="list-style-type: none"> • Inception report • Quarterly progress reports • Annual project review reports 	<ul style="list-style-type: none"> - number of technical reports related to surveyed topics - number of project reports 	Activity completion reviews at the end of the project
Activity 2: Development of fisheries governance on coastal management	<ul style="list-style-type: none"> • Inception report • Quarterly progress reports • Annual project review reports 	<ul style="list-style-type: none"> - number of former and newly established community fisheries organizations and institutions - number of community fisheries organizations and networks - number of coastal resource management activities executed by community fisheries organizations - number of sustainable livelihood activities handled by the community fisheries organizations 	Activity completion reviews at the end of the project on the sites
Activity 3: Contribution of community fisheries to sustainable livelihood	<ul style="list-style-type: none"> • Inception report • Quarterly progress reports • Annual project review reports 	<ul style="list-style-type: none"> - number of community fisheries products - number of alternative jobs related to the fisheries - number of alternative jobs outside the fisheries sector - number of fisheries households attaining food security in terms of sufficient food supply and comparative advantages - number of women employed in community fisheries - number of fisheries households not fully dependent on the fisheries sector 	Activity completion reviews at the end of the project on the sites

6. Indicative work plan

The indicative work plan should be prepared using scheduling software. This work plan should identify and graphically illustrate the activities in the logical order that is necessary for the production of each output. The vocabulary of activities should describe actions, *e.g.*, "implementation of training" or "consultations with Member Countries' customs departments". ASEAN cooperation often deals with similar outputs. Therefore, the activity lists for common outputs can be based on some standard models.

See [Appendix 1](#)

7. Management and implementation arrangements

- a. Management arrangements This section needs further consultation with ASEAN SEC)

The management arrangements should identify the project's Sponsoring ASEAN Body, *e.g.*, "the Committee on Social Development" or "the working group on non-tariff barriers". That body has the responsibility to designate a manager for the project who will be responsible for the achievement of the project objectives. The project manager must see that the planned work is actually done and that finished work actually achieves the objective. The management arrangements should specify to whom the project manager must report and with which other ASEAN bodies he/she must coordinate the project's work.

The ASEAN Sectoral Working Group on Fisheries (ASWGF_i) will be designate as a manager for the project???

The project management and administration will comprise two levels (project-level and site-level managements) and two stages (preparation and implementation stages). At project-level management, SEAFDEC, local government officials and local stakeholders representing Malaysia, Indonesia and Brunei Darussalam will be nominated as members of the project steering committee. Representatives from the Philippines, Thailand and Cambodia may also be nominated as members of the steering committee.

The steering committee will look at the possibility of implementing project activities in their respective countries. The steering committee may convene an inception meeting during the preparation stage of the project in order to confirm and finalize the project site selection. During the implementation stage, the steering committee may convene regular meetings at least twice a year to monitor the logistics and progress of the project implementation. At site-level management, the selected countries may establish an implementing committee to assist the steering committee in the implementation of the project action plan. During the implementing stage, the implementing committee may convene quarterly meetings (four times a year).

- b. Implementation arrangements

The implementation arrangements define the organizational unit or the personnel who will actually produce the project's outputs. The implementers, who may be consultants, experts or personnel of ASEAN Governments or the Secretariat, should be identified for each output. Reporting requirements and relationships should be explained as an element of the implementation arrangements. To ensure full understanding of roles and responsibilities, the project manager should identify "parties responsible" for implementation of each activity

when he/she revises the indicative work plan into the actual work plan after project approval.

SEAFDEC is an inter-governmental organization specialized in fisheries through providing technical supports to the ASEAN Member Countries in the field of training, research and information dissemination for over 40 years. It has accumulated its competence in various fields of fisheries including management, assessment of aquatic fisheries resources, capture fisheries, aquaculture and fishery post-harvest development. ASEAN and SEAFDEC have so far continued its strong collaboration in the field of fisheries to secure sustainable fish supply for food security for each ASEAN Member Country. SEAFDEC will therefore be an executing agency for this project.

The SEAFDEC shall be responsible for implementing the Project with due diligence and efficiency, in accordance with the Project Proposal attached and the Budget approved by the ASEAN Secretariat and the Islamic Development Bank (IDB), and with any supplementary arrangement which may be agreed between the Parties. SEAFDEC shall provide technical assistance through organization's human resources within our competent and further collaborate with relevant national and regional experts to accomplish the project activities.

Name of Institution: Southeast Asian Fisheries Development Center
Secretariat
Suraswadi Building
Kasetsart University Campus

P.O. Box 1046 Kasetsart Post Office
Bangkok 10903, Thailand
Tel: +662-940-6326
Fax: +662-940-6336

The project will be coordinated by:

Mr. Somnuk Pornpatimakorn, Administration and Finance Coordinator, and
Mr. Somboon Siriraksophon, Policy and Program Coordinator

The project will be jointly implemented by SEAFDEC and its Departments with the appropriate inputs based on the respective competent developed by these Departments.

c. Monitoring and Evaluation Arrangements

Describe the evaluation strategy for this project, including when the review/evaluation is to take place, the key evaluation issues to be addressed, and how it is to be financed. (It is recommended that the project budget include an allocation for the review/evaluation.)

A performance evaluation report on enhancing coastal community resilience activities will be considered as the project final report reflecting the outcomes of the individual project activities and overall evaluation of the project.

8. Inputs

There may be many possible combinations of inputs that can produce the proposed outputs. The formulator of the Project Document should seek to identify inputs that will enable efficient project implementation, that are appropriate to the work to be done, and that are cost effective. As an aid to the determination of inputs, the project formulator should refer to the indicative work plan. The questions that project formulators need to consider in regard to the selection of inputs include:

- Which inputs should be used?
- What kind of inputs?
- How many? (for consultants or equipment)
- What duration? (for personnel assignments)
- How much does it cost?

Major inputs required for the production of each output should be presented on a table. This table can be created using word processing or spreadsheet software. The purpose of the table is to facilitate the selection of appropriate inputs and to enable project implementers and appraisers to easily understand the relationships between inputs and outputs. The table should describe inputs in five categories: contracted personnel, contracted organizations, equipment, supplies and services, and travel and per diem. Additional details, such as TOR for contracts, should be provided and attached as annexes.

Project Activities:

Activity 1: Community surveys and needs assessment

The main objective of this activity is to establish an overview of the traditional community information and scientific database in order to formulate appropriate action plan and activities for sustainable management of the coastal resources and livelihoods in fisheries. Three basic methods will be used, namely: 1) regular conduct of data collection and special topic surveys; 2) using the survey results to set up and prioritize activities that include technology transfer and human resource development; 3) dissemination of survey results to community fisheries organizations through community meetings, extension programs and services. Special topics of the surveys will focus on social, economic, administrative and environmental aspects to assess the capacity, problems and needs of the fishing communities. The participation of community stakeholders in planning and designing the surveys will be promoted. At the project activities planning, the issue on prevention of coastal fisheries community from natural disaster will be also taken into account.

Activity 2: Development of fisheries governance on coastal management

This activity aims to develop the capacity of the local resource users and stakeholders in community fisheries organizations and institutions for coastal resource management applying the well-documented concept of fisheries management. This activity is also intended to strengthen existing institutions of people's groups or organizations in developing community economics and coastal resource management plans. The community fisheries organizations will take the leading role in promoting food security in terms of sufficient fish food supply, various job opportunities and environment-friendly coastal protection activities as well as identification of areas for research and development of simple early warning system for natural disasters. A strategic plan for this activity is the conduct of community fisheries meetings on regular basis to discuss and make decisions as well as exchange information. Training and capacity building activities related to community fisheries organization and institution will be provided to stakeholders concerned. The extension programs and services are aimed to assist the community fisheries organizations and stakeholders in self-managing the coastal resources within their own boundaries and in developing alternative livelihoods.

Activity 3: Contribution of community fisheries to sustainable livelihood

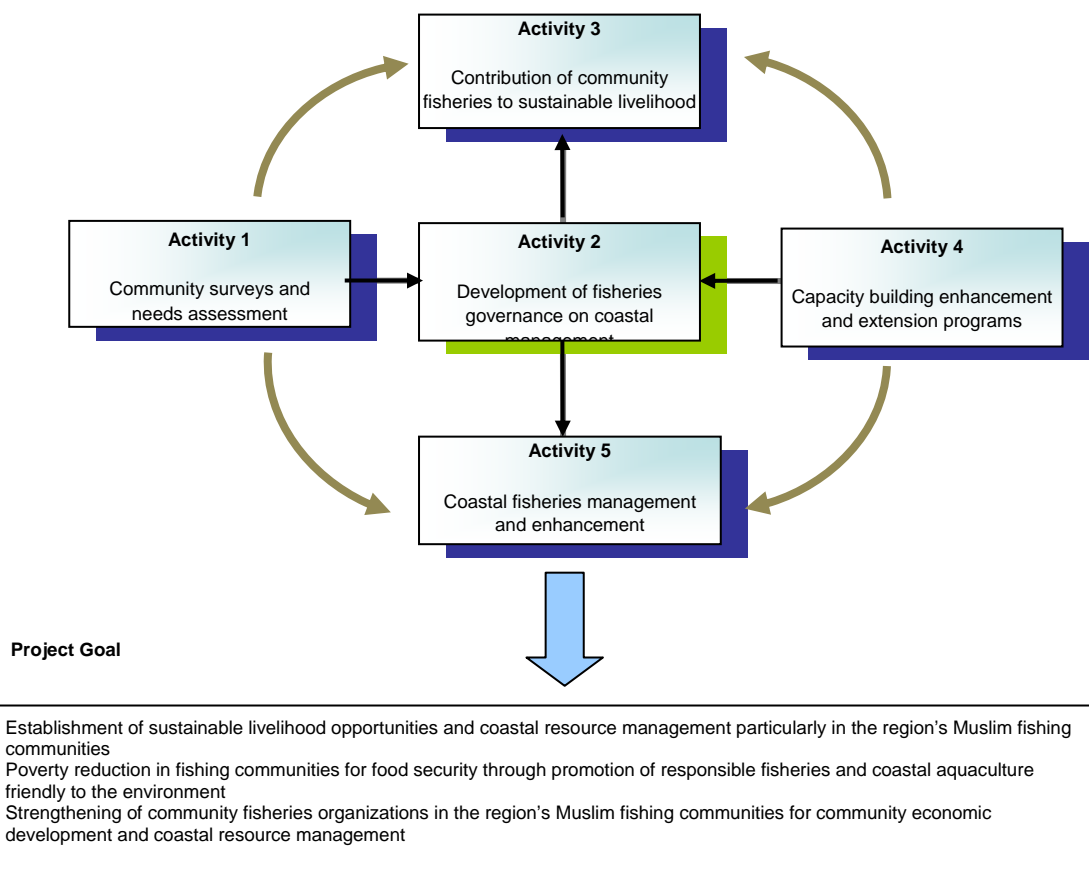
This activity aims to secure means of fisheries livelihood in fishing communities as well as to increase incomes and provide job opportunities particularly outside the fisheries sector. Three strategies will be adopted, namely: fisheries post-harvest technology transfer, responsible fisheries and environment-friendly aquaculture, and recreation fishing. Fisheries post-harvest technology transfer will be conducted through training activities in order to improve the traditional knowledge of women and sanitation in producing community fishery products. This is envisaged to develop and strengthen the capability of women in fishing communities individually and at the organizational level, for the establishment of local community business ventures. Responsible fisheries and environment-friendly aquaculture will be promoted as means of sustainable livelihoods in fisheries. Recreation fishing will also be promoted as possible alternative job opportunities in eco-tourism in the fishing communities.

Activity 4: Capacity building enhancement and extension programs

This activity is intended to enhance the capacity of resource users and stakeholders to be able to actively participate in coastal resource management, sustainable livelihoods development, through a series of training courses and extension programs by strengthening and building upon the traditional awareness and knowledge of the resource users and stakeholders on coastal resource management. Their capacity in developing local business ventures and income-generating activities as well as in financial management will be enhanced. Lessons and experiences gained will be compiled and published as guidelines, manuals and other information formats for dissemination. In addition, the activities will also extend to cope with adaptive to the impacts of climate change and build people's capacity to reduce the vulnerability due to natural disasters. The coastal community should understand and aware of potential impacts of climate change on the coastal environments and able to reduce the risk of their life and livelihoods, this can promote through extension programs and training activities, which the issues cover education on impacts of climate change, training on safety at sea for small-scale fishermen, development of simple early warning system for coastal community, etc.

Activity 5: Coastal fisheries management and enhancement

This activity, which emphasizes on the resilience of coastal resources, aims to enhance and rehabilitate the aquatic resources, habitats and sanctuaries through the traditional fisheries management practices and modern fishing technologies. Resource users and stakeholders will be encouraged to actively participate in fish releasing and installation of fish aggregating devices. Fish releasing will consider the species' economic and conservation aspects, and will be conducted at the right season and in appropriate fishing grounds. Fisheries management practices and fish aggregating devices installation will be implemented based on traditional and scientific knowledge, technology and information. Resource users and stakeholders will be encouraged to take the leading role in the enforcement of rules and regulations based national fisheries laws to strengthen their functions in coastal resource management and enhancement.



As the core activity of the project, Activity 2 intends to promote people's participation in organizing community fisheries organizations based on community-based fisheries management and co-management approaches, and take the main role in fisheries governance on coastal resource management. While Activity 3 mainly supports creating job opportunities and employment for the local stakeholders particularly the women and youth in the fishing communities, Activity 5 aims to enhance and rehabilitate the aquatic resources, habitats and sanctuaries, as primary steps in coastal resource management. The community fisheries organizations established in Activity 2 will take the role of managing Activities 3 and 5 with Activity 1 and Activity 4 supporting Activities 2, 3 and 5.

Results from research and surveys (Activity 1) will be used to determine the capacity and needs for community development and resource management as well as to design the action plan and appropriate project activities. Training and extension programs in Activity 4 for capacity building of the local stakeholders, will be developed based on the results of the surveys. The implementation of the five activities will be prioritized based on local people's needs and the project annual action plan.

9. Budget and funding arrangements This section needs further consultation with ASEAN SEC and IDB)

The selected inputs and their costs are consolidated on a project budget which should be presented on a spreadsheet under the following headings: contracts (individual, corporate or institutional); equipment; supplies and services; travel and daily subsistence allowance (not related to contracts). If more than one funding source is proposed, a budget should be prepared for each one.

The project is co-funded by Islamic Development Bank (IDB) in cash through ASEAN Secretariat, SEAFDEC in kind including the mobilization of technical staff and use of facilities and services possessed by SEAFDEC Departments and ASEAN Member Countries in kind including mobilization of technical staff as well as existing system to achieve the project objectives. Total budget is estimated in Appendix 2.

Attachments

The attachments listed and described below should be appended to the Project Document as necessary or appropriate.

a. Mobilization Plan.

A plan should be prepared that describes how the project will be activated once it is approved. The preparation of this plan is especially important when the finalization of funding arrangements remains to be done. This plan could also include the designation of the project manager and any other steps that must be taken to enable the project manager to initiate implementation of the project.

b. Explanation of Budget Estimates.

This attachment should explain how budget estimates were determined for major inputs. In many cases, this attachment may simply refer to ASEAN pro forma figures for budgeting. Otherwise, supporting information should explain how budget figures were calculated.

c. Terms of Reference (TOR) for Contracts.

In the event that important elements of the project will be done on a contractual basis, the TOR should be prepared in draft as attachments. Contracts can be for individuals, firms, non-governmental organizations or other institutions. The format and instructions for the preparation of TOR for contracts provided in Form APDM/TOR.

d. Specifications for equipment.

An attachment should be prepared with the specifications for any equipment item over \$10,000 in value or for multiple purchases of a smaller item whose aggregate value exceeds \$10,000.

e. Other Attachments.

Other attachments may be provided in order to explain or clarify the Project Document. These might include explanatory technical data or a bibliography. Such additional attachments are not mandatory and should be prepared only if deemed essential for understanding of the Project Document by appraisers or potential funding agencies.

Review

The project proponent should review the draft project document for (1) clarity of the logical connections among elements of the project; (2) completeness, according the requirements of the project document format; and (3) correctness (facts, grammar, spelling). The first draft of the Project Document should be circulated for substantive comments within the concerned ASEAN body and revised accordingly before submission to the THE COORDINATION UNIT (PCU) for appraisal and further processing.

PROPOSED INDICATIVE WORK PLAN

Project Activity	1 st Year				2 nd Year				3 rd Year			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Community survey and needs assessment 1- community development and coastal resource management 2- fisheries governance development and management 3- baseline survey 4- fish marketing surveys 5- impacts of climate change/natural disasters surveys 6- monitoring and evaluation surveys on project implementation and upon termination												
2. Development of fisheries governance on coastal management 1- problem-solving and situation analysis with involvement of former and/or newly established community fisheries organizations 2- formulation of plans and activities on coastal resource management and sustainable livelihood with participation of community fisheries organizations 3- support for the functions and networking of community fisheries organizations in the area of conflict management 4- ad hoc meeting for special issues and activities												

Project Activity	1 st Year				2 nd Year				3 rd Year			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
3. Contribution of community fisheries to sustainable livelihood 1- Workshop on identifying possible approaches to improve community livelihoods for women's groups and fisher groups 2- Promotion of various fisheries products and micro credit schemes 3- Promotion of coastal aquaculture, cage culture and shell culture 4- Promotion of eco-tourism, sports fishing and home stay 5- Promotion of cooperative dry goods grocery store												
4. Capacity building enhancement and extension program 1- Orientation on community fisheries organization functions and responsibilities 2- develop the community leaders, religious leaders and stakeholders in management and organization of community fisheries 3- develop women and youth in fishing communities on community development and coastal management 4- promotion of fish marketing and product development 5- capacity building for increased income and financial management 6- capacity building on responsible fisheries practice and modern fishing technologies 7- capacity building to reduce vulnerability												

<p>from climate change/natural disasters</p> <p>8- coastal resource restoration based on the findings of the surveys</p> <p>9- provision of information on community development and coastal resource management through printed materials and local wired announcements (if available)</p> <p>10- coordination with religious leaders and community leaders on logistic works and project implementation</p>												
<p>5. Coastal fisheries management and enhancement</p> <p>1- aquatic resources and habitat enhancement and rehabilitation through traditional fisheries management and practices</p> <p>2- promotion of fish releasing and fish aggregating device installation</p> <p>3- enforcement of rules and regulations on new habitat improvement tools by resource users and stakeholders</p>												
<p>6. Project Evaluation and Reporting</p>												

Appendix 2

PRELIMINARY COST ESTIMATE

Categories	Year 1	Year 2	Year 3
1) Activity 1: Community survey and needs assessment	8,000	20,000	14,000
2) Activity 2: Development of fisheries governance on coastal management	12,000	30,000	15,000
3) Activity 3: Contribution of community fisheries to sustainable livelihood	8,000	30,000	15,000
4) Activity 4: Capacity building enhancement and extension program	12,000	30,000	20,000
5) Administrative	5,000	5,000	5,000
Sub-total	45,000	115,000	69,000
Contingency (10%)	4,500	11,500	6,900
Total	49,500	126,500	74,000
Total Proposed Budget	250,000		

Climate Change and its Impacts on Fisheries and Aquaculture: Adaptation and Mitigation towards Food Security

Concept Note

Background

Fisheries sector plays a very important role to the national economy particularly on livelihood and food security of people in the ASEAN Region as it has been the main supplier of food protein for the people in all the ASEAN Member States (AMSs). For the past number of years, global concern on climate change called for attention on impact from global warming or climate change including its impact to the fisheries sector. Climate change already affects Southeast Asia, among others through the increase in frequency and intensity of extreme weather with huge consequences *i.e.* flooding and sea water rises, change of water temperature, change in species composition and distribution, coral bleaching, increase in storms and cyclones, etc. Moreover Southeast Asian region is one of the world's most vulnerable regions to climate change, due to its long coastlines, high concentration of population and economic activity in coastal areas and heavy reliance on agriculture, fisheries, forestry and other natural resources.

In the ASEAN Region, climate change is a compounding threat to the sustainability of capture fisheries and aquaculture development as it has impact on ecosystems, livelihoods and implication to food security. Urgent adaptation and mitigation measures are required in response to opportunities and threats to food and livelihood provision due to climate variations. To ensure long-term food security in the ASEAN region in accordance with the ASEAN Integrated Food Security (AIFS) Framework and the Strategic Plan of Action (SPA-FS) adopted by the ASEAN Leaders at the 14th Summit in March 2009 that addressing issue on impacts of climate change on food security; as well as the recently developed "ASEAN Multi-Sectoral Framework on Climate Change: Agriculture, Fisheries and Forestry Towards Food Security" (AFCC Framework), which agreed at the ASEAN High-Level Workshop on the ASEAN Multi-Sectoral Framework on Climate Change and Food Security held in September 2009, a program on "Climate Change and its Impacts on Fisheries and Aquaculture: Adaptation and Mitigation towards Food Security" is initiated to be implemented in the ASEAN Region. The program activities will be implemented under the ASEAN-SEAFDEC Strategic Partnership (ASSP) Arrangement that will provide regional framework on cooperation and coordination on climate change issues relevant to fisheries and food security in the ASEAN Region.

Objectives

Overall objective of the program are to address and respond to the challenges and concerns on climate change to food security from fisheries sector through a range of key climate change adaptation and mitigation measures focusing on developing the knowledge base with respect to fisheries and aquaculture, addressing policy, programs and implementation frameworks at national, regional and international levels, and capacity building and supporting enabling mechanisms.

The specific objectives of the program are as follows:

1. To build capacity for human and institutions involved in fisheries and ecosystem management as well as relevant sectors in tackling and respond to the impacts of climate change and adaptive needs
2. To integrate climate change mitigation and adaptation measures/strategies into the economic and social development policy framework for fisheries (inland and marine fisheries and aquaculture)
3. To strengthen national and regional information and knowledge sharing, communication and networking on climate change and food security

4. To enhance cooperation in the implementation of adaptation and mitigation measures

Proposed Activities

The program will be implemented under the ASSP Program to strengthen capacity of the ASEAN Member States in addressing climate change and its impact on fisheries and aquaculture with the proposed activities that are in line with AIFS Framework (Strategic Thrust 6) and AFCC Framework as follows:

Component 1: Integration of climate change mitigation and adaptation strategies into the economic and social development policy framework

Activity 1: Assess the impacts of climate change on and risks for fisheries and aquaculture and contributions of fisheries sectors to climate change

Activity 2: Assess environmental impacts and risks, specifically on biological diversity

Activity 3: Assess the socio-economic impacts and risks of climate change, and identify the most vulnerable and priority geographic areas and communities for climate change adaptation and mitigation

Activity 4: Formulate food security measures to address and respond to climate change to enhance sustainable development and strengthen livelihoods

Activity 5: Incorporate climate change adaptation and mitigation measures and strategies into national development strategies, policies and programs

Component 2: Cooperation on the implementation of adaptation and mitigation measures

Activity 1: Share knowledge and experience on and promote integrated adaptation and mitigation options for agricultural production systems

Activity 2: Cooperate on the promotion of adaptation and mitigation in fisheries

Activity 3: Foster co-benefit approaches integrating environmental concerns such as biodiversity and ecosystem conservation into climate change-related measures

Component 3: Strengthening of national and regional information and knowledge sharing, communication and networking on climate change and food security

Activity 1: Synergize data bases and information systems related to climate change, fisheries and food security

Activity 2: Strengthen national and regional cooperation, coordination, consultation and communication on the impacts of and response to climate change on fisheries and aquaculture towards food security

Activity 3: Strive for coordinated or common positions on climate change, fisheries and food security

Activity 4: Strengthen regional partnerships and coordination with ASEAN partners on *climate change and food security*

“Promoting Sustainable Food Production” through Responsible Fishing Technologies and Practices

Concept Note

Background

In the ASEAN region, the fisheries sector plays a very important role in ensuring food security of its people as it has been the main supplier of protein for the peoples' nutrient requirements in all the ASEAN Member States (AMSs). During the past several years, the growing international, regional and national demand for fish and fisheries products has led to continual development and modernization in fishing technology and has resulted in the over-exploitation of fishery resources. Due to the lack of awareness and knowledge on responsible fishing technologies and practices in fisheries in the past, the use of illegal and destructive fishing gears and methods, including non-selective fishing gear, are seriously threats to the sustainability of fishery resources and the integrity of the coastal, marine and inland water ecosystem and environment.

The current status of fishery resources and aquatic ecosystem in the ASEAN region is now a serious concern and requires the achievement of sustainability for livelihood and food security. To ensure long-term food security in the ASEAN region in accordance with the ASEAN Integrated Food Security (AIFS) Framework and the Strategic Plan of Action (SPA-FS) adopted by the ASEAN Leaders at the 14th Summit in March 2009, a program on “Promoting Sustainable Food Production” through Responsible Fishing Technologies and Practices is initiated to be implemented in the ASEAN Region. The program will strive for greater collaboration and commitment towards resource sustainability through the promotion of responsible fishing technologies and practices as ways and means to promote sustainable food production and food security.

Objectives

Overall objectives of the program are to build capacity and awareness of the relevant stakeholders *e.g.* government officials and fishers of the ASEAN Member States (AMSs) on responsible fishing technologies and practices towards sustainable fisheries and promoting sustainable food production for food security in the ASEAN Region. The specific objectives are as follows:

1. To improve and promote the use of selective fishing gear and practices such as by-catch reduction devices/Juvenile and Trash Excluder Devices;
2. To reduce the impacts of fishing on the coastal marine and inland ecosystem;
3. To promote the reduction of mortality of threatened species such as sea turtles and other animals due to interaction with fisheries;
4. To promote technologies in order to save energy and the use of alternative sources of energy in fisheries including safety at sea; and
5. To raise awareness on responsible fishing by production and disseminating promotional materials in collaboration and cooperation with ASEAN Member States and other organizations at the regional and international levels.

Proposed Activities

The program will be implemented under the ASSP Program with the proposed activities as follows:

1. Research and development activities on best fisheries practices and technology transfer
 - 1.1 Conduct the review of selective fishing gear and practices
 - 1.2 Conduct demonstrations and experiments on selective fishing gear and practices including by-catch/juvenile reduction devices

- 1.3 Conduct research and study on the impacts of fishing on the aquatic environment and ecosystem such as light fishing, bottom affecting fishing, etc.
 - 1.4 Conduct study on collection of information on sea turtle mortality due to fishing operations
 - 1.5 Conduct assessment on the implementation of Turtle Excluder Devices (TEDs) and circle hooks; together with the demonstration on the use of TEDs and circle hooks; including observer training to promote those gears of sea turtle mortality due to fishing operations
 - 1.6 Conduct research and study to review and develop the design and construction of fishing gear and fishing boats to introduce and promote engineering technology for energy saving in fishing operations. The use of wind energy and alternative source of energy will be promoted in ASEAN together with the safety at sea for fishing boats and crew.
2. Awareness and capacity building on the best practices that promote livelihood and food production at the local level
 - 2.1 Raise awareness on responsible fishing technology and practices by production and disseminating promotional materials and working in collaboration and cooperation with AMSs and other organizations at the regional and international levels

Project Period: 3 years (2010-2012)

Strengthen Food Security Arrangements through Fisheries Intervention: Strengthening National and Local Governments in the development of Food Security Programs/Initiatives

Concept Note

Background

Food security does not mean only rice but includes nutritious food that meets people's dietary needs and food preferences for an active and healthy life. Fisheries then are recognized as it also contributes to food security. In the ASEAN region, the fisheries sector plays a very important role in ensuring food security of its people. Considering that the people in the ASEAN region are fish eaters with an average annual per capita consumption of about 26.8 kg, the fisheries sector has therefore been the main supplier of protein for the peoples' nutrient requirements. Sustainable development of the region's fisheries sector is therefore essential for the development of national economies as well as for poverty alleviation and eventually for local food security.

To ensure long-term food security in the ASEAN region in accordance with the ASEAN Integrated Food Security (AIFS) Framework and the Strategic Plan of Action (SPA-FS) adopted by the ASEAN Leaders at the 14th Summit in March 2009, and enhancing awareness on the important role and contribution of fisheries sector to food security, a program on "Strengthening Food Security Arrangements through Fisheries Intervention" is initiated to be implemented in the ASEAN Region. The program activities will be implemented under the ASEAN-SEAFDEC Strategic Partnership (ASSP) Arrangement which also aims to assist the ASEAN Member States in promoting sustainable fisheries development.

Objectives

Main objectives of the program are to strengthen capacity of the national and local governments of the ASEAN Member States (AMSs) in the development of food security programs and initiatives to ensure medium and long-term food security in respond to the global challenges with due support to the implementation of AIFS Framework and the SPA-FS; and to raise public awareness on the role and contribution of fisheries sector to food security.

Proposed Activities

The program will be implemented under the ASSP Program to strengthen the national and local governments in the development of food security programs/initiatives focusing on livelihood program *i.e.* schools/villages fish pond; community-based rural aquaculture; promotion of "One Village, One Fisheries Product" or FOVOP, etc.

The following activities are proposed:

1. Capacity building to strengthen national and local food security programs/initiatives:
 - 1.1. Conduct training workshop/HRD on community-based aquaculture for the remote rural areas in the ASEAN Region
 - 1.2. Conduct training workshop/HRD on schools/villages fish pond
 - 1.3. Conduct workshop/HRD on promotion of "One Village, One Fisheries Product" (FOVOP) in all AMSs to build awareness on its Regional Guidelines/Strategy and capacity in identifying potential FOVOP products and process, and development for SME
2. Exchange of information and experiences among ASEAN Member States on the outcomes of the projects implemented in ASEAN through regional consultations in formulation and implementation of national and local food security programs/initiatives/activities;

3. Developing guidelines to facilitate national activities to develop local food security initiatives
4. Establishing network for the success cases for further expansion

Project Period: 3 years (2010-2012)

Safety at Sea for Small Fishing Boats

1. Background and Justification

For the Southeast Asian Fisheries Development Center (SEAFDEC), Safety at Sea for Small Fishing Boats is an area which has explored very recently in the wide range of fisheries activities. However, having developed the Regional Guidelines for Responsible Fisheries, safety of fishing boats at sea is a corollary to and a logical development of responsible fishing practices. Until now no guidelines has been developed and no standards defined for safety equipment that should be carried onboard.

Results of the first workshop on Safety at Sea for Small-scale Fishing Boats in 2003 recommended a logical sequence of activities that should be implemented to achieve safety at sea for small-scale fishers in Southeast Asia. The development of standards for boat design and its endorsement are vital.

Results of the study on safety at sea for fishing boats in the Gulf of Thailand and the Andaman Sea conducted with the support of FAO in 2008 show that most of commercial trawlers and purse seiners are at a standard level of safety at sea but smaller ones do not meet safety standards stipulated by regulations set by the Marine Department for boats of 24 meters or more in length.

Due to lack of awareness, knowledge and standards of safety at sea for small fishing boats, the safety at sea issues in Southeast Asia is a serious concern and requires the implementation of activities for the safety standards in the region.

2. Project Objectives

- 1) To review and discuss the situation of safety at sea in Southeast Asian countries;
- 2) To gather data/information on the Accident Recording for fishing boats;
- 3) To produce the standard and guideline on safety at sea for fishing boats in Southeast Asia; and
- 4) To establish a collaborative relationship among related organizations in southeast Asia.

3. Project Description

Project activities will focus on a review of the situation of safety at sea for fishing boats in Asian region. With this regard, a workshop on safety at sea for fishing boats will be conducted in order to review and collect the existing data and information. The survey in selected countries in Southeast Asia will also be conducted in cooperation with Marine Department and Department of Fisheries separately.

After those activities above-mentioned, the standards and guidelines for safety at sea for fishing boats in Southeast Asia will be produced and disseminated to fishermen and all concerned in the region.

4. Project activities

- 1) Regional workshop on safety at sea for fishing boats in Southeast Asia
- 2) Survey for data collection of safety at sea for fishing boats in selected countries
- 3) National workshop in selected countries
- 4) Production of the standards and guideline for fishing boats in Southeast Asia
- 5) Dissemination of the guideline and pocket books to SEAFDEC Member Countries



PROJECT IDENTIFICATION FORM (PIF)
PROJECT TYPE: Full-sized Project
THE GEF TRUST FUND

* See guidelines for definition of milestones.

Submission Date: 14 April 2009

PART I: PROJECT IDENTIFICATION

GEF PROJECT ID¹⁶: PROJECT
DURATION: 60 months
GEF AGENCY PROJECT ID:
COUNTRY(IES): Cambodia, Indonesia, Philippines, Thailand, and Viet Nam
PROJECT TITLE: Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand
GEF AGENCY(IES): UNEP, (select), (select)
OTHER EXECUTING PARTNER(S): Departments of Fisheries in the participating countries; Southeast Asian Fisheries Development Center (SEAFDEC)
GEF FOCAL AREA (S)¹⁷: Multi-focal areas

INDICATIVE CALENDAR*	
Milestones	Expected Dates mm/dd/yyyy
Work Program (for FSP)	June 2009
CEO Endorsement/Approval	April 2010
Agency Approval Date	June 2010
Implementation Start	August 2010
Mid-term Evaluation (if planned)	August 2012
Project Closing Date	July 2015

¹⁶ Project ID number will be assigned by GEFSEC.

¹⁷ Select only those focal areas from which GEF financing is requested.

Project Objective: The overall objective of the project is to operate and expand the network of fisheries <i>refugia</i> in the South China Sea and Gulf of Thailand for the improved management of fisheries and critical marine habitats linkages in order to achieve the medium and longer-term goals of the fisheries component of the Strategic Action Programme for the South China Sea.								
Project Components	I, TA, or STA ^b	Expected Outcomes	Expected Outputs	Indicative GEF Financing ^a		Indicative Co-Financing ^a		Total (\$) c = a + b
				(M \$) a	%	(M \$) b	%	
1. Identification and Management of Fisheries and Critical Habitat Linkages in the South China Sea and Gulf of Thailand	TA	<p>1.1 Effective operation of the regional system of fisheries refugia for the management of priority, transboundary, fish stocks and endangered species, including: boundaries for 23 refugia sites delineated;</p> <p>1.2 implementation of fisheries management systems in 23 fisheries refugia that are consistent with the FAO Code of Conduct for Responsible Fisheries and the Regional Guidelines for Responsible Fisheries in Southeast Asia; and</p> <p>1.3 fishing communities, particularly artisanal fishermen and women involved in inshore gleaning and processing, empowered to enforce agreed management rules in the fisheries refugia.</p>	<ul style="list-style-type: none"> ▪ Maps and site characterisations for 23 fisheries refugia sites and additional 30 known fish spawning and nursery areas. ▪ Fisheries management plans for 23 refugia sites. ▪ Management team and community-based volunteer network at each site. ▪ 6 national and 1 regional fisheries and biodiversity conservation databases, including: status of priority fish, crustacean, and mollusk species; distribution and abundance of fish eggs and larvae; and location and management status of coastal habitats, fisheries refugia, MPAs, and critical habitats for threatened and endangered species. 	1,8	34	3,50	66	5,30
2. Improving the Management of Critical Habitats for Fish Stocks of Transboundary Significance	STA	<p>2.1 Improved integration of habitat and biodiversity conservation considerations in the management of fisheries in the South China Sea and Gulf of Thailand, including: enhanced scientific</p>	<ul style="list-style-type: none"> ▪ Regional model of fish egg and larvae distribution. ▪ Regional and site level models of ecosystem carrying capacity and sustainable fishing effort levels by fishing gear type. ▪ 6 national reports on 	1,5	40	2,25	60	3,75

		understanding of fish stock and habitat links; and endorsement by Ministers of Fisheries of policy and regulatory frameworks governing the fisheries sector that incorporate measures for sustainable use of fish habitats and biodiversity; and 2.2 reduced use of destructive fishing gear and practices in areas of critical fisheries habitats.	legal/institutional aspects of refugia. <ul style="list-style-type: none"> ▪ 6 sets of national guidelines for establishing and operating refugia. ▪ 120 quarterly national reports on fish stocks and habitats. ▪ 6 national reports on, and regulations/ordinances for, use of responsible fishing gear and practices in priority refugia. ▪ 1 regional and 6 national action plans for management of priority fisheries refugia and associated biodiversity. 					
3. Information Management and Dissemination	TA	3.1 Enhanced uptake of good practices in integrating fisheries management and biodiversity conservation in the design and implementation of regional and national fisheries management systems. 3.2 Improved community acceptance and cost-effectiveness of area based approaches to marine management.	<ul style="list-style-type: none"> ▪ Regional education and awareness centre on links between fisheries, habitats, and biodiversity, and associated regional Information and Education Campaign (IEC). ▪ Public awareness and outreach programmes on fish stock – habitat links at 23 sites. ▪ Report on indicators and standardised methods for information and data collection for refugia management. ▪ Development of 6 national language web portals on fisheries refugia and maintenance of the regional Fisheries Refugia Information Portal http://refugia.unepscs.org . 	0,75	33	1,50	66	2,25
4. Project management				0,45	31	1,0	69	1,45
Total project costs				4,5	35	8,25	65	12,75

GEF-4 STRATEGIC PROGRAM(s): BD-SP2; BD-SP3; IW-SP1

NAME OF PARENT PROGRAM/UMBRELLA PROJECT (if applicable):

A. PROJECT FRAMEWORK

^a List the \$ by project components. The percentage is the share of GEF and Co-financing respectively of the total amount for the component.

^b TA = Technical Assistance; STA = Scientific & Technical Analysis.

B. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE and by NAME (in parenthesis) if available, (\$)

Sources of Co-financing	Type of Co-financing	Project
Project Government Contribution	In-kind	3,315,000
Project Government Contribution	cash	1,785,000
GEF Agency(ies)	(select)	
Bilateral Aid Agency(ies)	(select)	
Multilateral Agency(ies) (SEAFDEC)	cash	3,150,000
Private Sector	(select)	
NGO	(select)	
Others	(select)	
Total Co-financing		8,250,000

C. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	Previous Project Preparation Amount (a) ¹⁸	Project (b)	Total c = a + b	Agency Fee
GEF financing		4,500,000	4,500,000	450,000
Co-financing		8,250,000	8,250,000	
Total	0	12,750,000	12,750,000	450,000

D. GEF RESOURCES REQUESTED BY AGENCY (IES), FOCAL AREA(S) AND COUNTRY(IES)¹

GEF Agency	Focal Area	Country Name/ Global	(in \$)		
			Project (a)	Agency Fee (b) ²	Total c=a+b
UNEP	Biodiversity	Cambodia	600,000	60,000	660,000
UNEP	Biodiversity	Indonesia	600,000	60,000	660,000
UNEP	Biodiversity	Philippines	600,000	60,000	660,000
UNEP	Biodiversity	Thailand	600,000	60,000	660,000
UNEP	Biodiversity	Viet Nam	600,000	60,000	660,000
UNEP	International Waters	Regional	1,500,000	150,000	1,650,000
(select)	(select)				
Total GEF Resources			4,500,000	450,000	4,950,000

¹ No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.

² Relates to the project and any previous project preparation funding that have been provided and for which no Agency fee has been requested from Trustee.

¹⁸ Include project preparation funds that were previously approved but exclude PPGs that are awaiting for approval.

PART II: PROJECT JUSTIFICATION

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:

The South China Sea and Gulf of Thailand are located at a global centre of shallow water marine biological diversity. The marine habitats of this area support fisheries that are significant in terms of food security, export income for riparian countries. Critical habitats, such as mangrove swamps, coral reefs, seagrass beds, and estuaries act as nursery areas, spawning grounds, and feeding sites for transboundary species during critical phases of their life-cycles.

Fishing has been identified by the UNEP/GEF Regional Working Groups for the Habitat Sub-Components of the South China Sea Project as a factor contributing to the continued loss of marine habitats and biodiversity in the South China Sea. Southeast Asian fisheries are characterised by high levels of coastal community dependence on fish for food and income, excessive and increasing levels of fishing effort, and diminishing availability of fisheries resources.

The effects of intensive inshore fishing include: declining availability and biomass of fish species of global and transboundary significance; changes in community structure due to direct reductions of populations representing specific trophic levels of the community (*e.g.* predator or prey); capture mortality of rare and endangered species; large catches of juvenile fish; and the degradation and loss of habitats and associated non-target biodiversity. The widespread use of inappropriate and destructive fishing gear and practices, such as the use of demersal trawls and push nets in seagrass areas, and the use of poisons and explosives to catch fish in coral reef areas, is of increasing concern with respect to the degradation and loss of habitats and biodiversity as a result of fishing. This situation has led to an urgent need for new and innovative fisheries management approaches in the region, particularly those aimed at limiting the loss of habitats and biodiversity, and ensuring the sustainable use of biodiversity by the fisheries sector.

The fisheries refugia initiative of the UNEP/GEF South China Sea Project is unique in that it represents the first attempt to establish a regional network of integrated fisheries and habitat management areas in Southeast Asia supported by national habitat action plans (NAPs) and fisheries policies. Furthermore, regional fisheries organisations, including the Southeast Asian Fisheries Development Center (SEAFDEC) and FAO's Asia-Pacific Fisheries Commission (APFIC) have acknowledged the unique role of the multi-lateral, intergovernmental South China Sea Project in building partnerships and enhancing communication between fisheries and environment sectors in the region for the improved management of the environmental aspects of fisheries. Fisheries refugia in this context are defined as "spatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species during critical stages of their life cycle, for their sustainable use", and it is also compatible with FAO's Ecosystem Approach to Fisheries (EAF). Annex 1 presents the approach to fish refugia as compared to that of the marine protected areas.

This project aims to expand the network of fisheries refugia in the South China Sea and Gulf of Thailand for the improved management of fisheries and critical marine habitats. Based on the draft SAP and NAPs developed under the ongoing South China Sea Project, 5 participating countries have included establishment and management of fisheries *refugia* in national fisheries policies and plans (Cambodia, Indonesia, Philippines, Thailand, and Viet Nam). All countries have expressed the need for further scientific research, cross sectorial co-ordination, guidelines regarding the process of establishing and managing fisheries refugia, and establishment of mechanisms for regional exchange of information and lessons learnt. Activities in the project will focus on ensuring adequate cross sectorial consultation between fisheries and environment departments in the designation and management of fisheries refugia. This is particularly important in relation to the designation by Ministries of Environment of Marine Protected Areas to ensure that such areas are congruent with habitat areas of critical significance to fish stocks. This will

involved the establishment of institutional mechanisms to effect the integration of habitat and marine biodiversity conservation considerations into fisheries management.

This initiative is considered of significance because of the potential fisheries and biodiversity conservation benefits associated with effect fisheries and habitat management at the local level. Fisheries management leading to sustainable levels of exploitation in the region, due to the importance of fisheries to food security, and maintenance of livelihoods. The management approaches developed and fostered through this project may also assist in curbing the trends in regional fisheries towards over-capacity and over-exploitation; the use of destructive fishing gear and practices; habitat destruction and pollution; and illegal fishing.

The decadal rates of decline in total area of critical habitats such as seagrass, coral reefs, and mangroves in the South China Sea and Gulf of Thailand are currently estimated at 30%, 16%, and 16% respectively. Fishing is a contributing factor to the loss and degradation of particularly seagrass and coral reef habitats and the expected outcome of this project of global significance is the reduction in the rates of loss of globally significant habitats and biodiversity in priority fisheries refugia due to fishing.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL/REGIONAL PRIORITIES/PLANS:

The FAO Code of Conduct for Responsible Fisheries recognises that, fisheries have the potential to alter the structure, biodiversity, and productivity of marine ecosystems, and recommends that innovative ecosystem-based approaches to fisheries management should be incorporated into existing regional and national fisheries management frameworks where possible. ASEAN and SEAFDEC adopted the “*UNEP/GEF Regional Guidelines on the Use of Fisheries Refugia for Sustainable Capture Fisheries Management in Southeast Asia*” in April 2006 which were published in May 2006 as part of the ASEAN-SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia for the implementation of the FAO Code of Conduct for Responsible Fisheries. In this connection, the 2008 Intergovernmental meeting of the SEAFDEC Council urged SEAFDEC member country governments to develop projects and initiatives aimed at ensuring more ecosystem-based approaches to fisheries management in the region.

During the period 2007-2008, the concept of fisheries refugia has been included in the following fisheries policies and plans of partner Member Countries as a priority tool for improved fisheries habitat management: Fisheries Law of Cambodia; South China Sea Fisheries Management Zone Plan in Indonesia; the Comprehensive National Fisheries Industry Development Plan in the Philippines; Thailand’s Marine Fisheries Policy; and the National Plan for the Management of Aquatic Species and Habitats in Viet Nam. This represents the first time regional consensus has been reached on how to build the resilience of Southeast Asian fisheries to the effects of high and increasing levels of fishing effort by enhancing the knowledge and capacity amongst stakeholders of ecosystem and fishery linkages, as a basis for integrated fisheries and ecosystem/habitat management.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH GEF STRATEGIES AND STRATEGIC PROGRAMS:

This proposal is aligned with two GEF Biodiversity Strategic Objectives, namely Strategic Objective 1 on Catalyzing Sustainability of Protected Area Systems and Strategic Objective 2 on Mainstreaming Biodiversity in Production Landscapes/Seascapes and Sectors. By using the innovative concept of fish refugia, the project will contribute to Strategic Programmes 2 and 4 of the GEF Focal Area Strategy for GEF-4 by enhancing the understanding of the effectiveness of different forms of marine biodiversity protection and how to combine conservation goals with generation of local benefits in the fisheries sector at both the national and regional levels.

The project will also contribute to the International Waters Strategic Objective 1: To Play a Catalytic Role in Addressing Transboundary Water Concerns by assisting countries to utilise the

full range of technical assistance, economic, financial, regulatory and institutional reforms that are needed and the International Waters Strategic Programme on Restoring and Sustaining Coastal and Marine Fish Stocks and associated Biodiversity that will be jointly implemented with the Biodiversity focal area and support policy, legal and institutional reforms and multiagency partnerships that contribute to WSSD targets for sustaining fish stocks.

D. JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES:

Co-financing to the project will come from the participating countries of the project and from Southeast Asian Fisheries Development Center (SEAFDEC), an intergovernmental organization and one of the executing partners to the project.

E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

This project is designed to build on achievements of the fisheries component of the UNEP/GEF Project Entitled “Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand” (South China Sea Project) in establishing a regional system of fisheries refugia. The achievements include inter alia: the publication of UNEP/GEF Regional Working Group on Fisheries’ Guidelines on the Use of Fisheries Refugia for Sustainable Capture Fisheries Management in Southeast Asia as part of the ASEAN-SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia; identification of 52 locations in the South China Sea known as critical spawning and nursery habitats for fish species of transboundary significance; regional agreement on the inclusion of 14 sites in an initial system of fisheries refugia; production of a regional fisheries refugia information base; and prioritisation of an additional nine sites from the remaining 38 sites for which further information is required. The project represents the implementation phase of the fisheries component of the revised regional Strategic Action Programme.

This project is linked to the network and institutions and experts of the UNEP administered Regional Seas Programme and the Action Plan for the Protection and Development of the Marine and Coastal Areas of the East Asian Region. Involvement of SEAFDEC as an Executing Agency aims to establish greater political support and enhanced mainstreaming of fisheries habitat and ecosystem considerations with broader fisheries management initiatives in Southeast Asia. Such broader initiatives include ASEAN, SEAFDEC, and APFIC programmes on the use of subsidies in fisheries, overcapacity, illegal and unregulated fishing, co-management, and rights-based approaches to fisheries management.

The UNEP/GEF Regional Working Group on Fisheries and SEAFDEC have noted the importance of close coordination with the proposed FAO/GEF Project on “*Strategies for Fisheries Bycatch Management*”. Similarly there is regional agreement that testing the refugia system in the South China Sea where significant preparatory work has been undertaken will provide a sound basis for the transfer of knowledge and experience on the use of refugia to fisheries habitat initiatives of the Western and Central Pacific Fisheries Commission and the Sulu-Sulawesi Marine Eco-Region programme in the adjacent coral triangle area. The project will also be implemented in close collaboration with the proposed coastal fisheries management project of the SEAFDEC-SIDA mechanism for the same time period (2009-2014). The latter project has been designed to link closely with actions of the fisheries component of the revised Strategic Action Programme for the South China Sea and Gulf of Thailand which this project aims to implement.

F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING :

There is considerable global concern for the ecosystem effects of fishing, particularly the loss of habitats and coastal and marine biodiversity as a result of fishing. In Southeast Asia this concern is intensified by the fact that most stocks of economically important fish species are considered to be fully fished or overexploited. Increasing global demands for fisheries products; and the dependence of coastal communities on fish for food and income results in a continued increase in fishing effort. This has caused fishing down of the marine food chain in the region, coupled with

an increasing dependence of the artisanal sector on small pelagic species due to declining availability of demersal species. Declining fish availability, coupled with over-capacity and the dependence of the small-scale sector on coastal fisheries for income generation has led to the use of destructive fishing practices by some fishermen in order to maintain incomes and food production in the short-term.

An emerging theme from the South China Sea Project is the need for improved management of the key threats to fish stocks and habitats from fishing. The main barriers in reducing the levels of the threats include:

- A. low level understanding amongst stakeholders, including fisherfolk, scientists, policy makers, and fisheries and habitat managers of ecosystem and fishery linkages,
- B. existing low level community acceptance of “protected” area-based approaches to marine management (Several past conservation initiatives in the region, particularly those associated with Marine Protected Areas, have promoted the complete closure of areas to fishing which is a futile if not impossible task in Southeast Asia. Such closures have been promoted in terms of potential fisheries benefits, however have often not included fishing communities and managers in the selection and management of areas.),
- C. limited information regarding fish life-cycle and critical habitat linkages, and the role marine habitats play in sustaining fisheries, and
- D. low level experience in national fisheries/environment departments and ministries in development of integrated approaches to fisheries and habitat management.

By addressing these issues and expanding the use of the fisheries refugia approach through the establishment and operational management of a network of fisheries refugia sites, the project will result in significant incremental benefit compared to the ‘no action’ option. Anticipated incremental benefits include: demonstration of sustainable use of fish stocks and habitats at fisheries refugia sites; improved community acceptance and cost-effectiveness of area based approaches to marine management; establishment of policy and regulatory frameworks governing the fisheries sector that incorporate measures for the sustainable use of fish habitats and biodiversity; and multi-lateral political commitments to enhance co-operation on fish stock and habitat management. It is anticipated that the experiences gained in this region will be suitable for application in other large marine ecosystems such as the Yellow Sea where over-fishing and the use of inappropriate fishing gear are significant impediments to more sustainable exploitation of fish stocks, their habitats, and associated biodiversity.

G. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING RISK MITIGATION MEASURES THAT WILL BE TAKEN:

Successful cross-sectorial co-ordination of activities between the fisheries and environment sectors in the participating countries is a key assumption. Many past marine protected areas in the region have been promoted in terms of their potential to improve the state of fisheries and their habitats, but have rarely included mechanisms to ensure the effective integration of fisheries considerations into management. In contrast, fisheries departments and ministries largely focus on achieving sustainable yields from fish stocks in the light of high community dependence on, and participation in small-scale fisheries. Experience in the South China Sea Project suggests that the risks that this assumption will not be met seems small as the fisheries refugia concept has provided an adequate platform for building the partnerships and enhancing communication between the environment and fisheries sectors to date. The refugia concept was used successfully in 2006 to resolve a long running conflict between the fisheries and environment sectors in the Philippines regarding the utilisation of fish stocks in areas of critical habitats in the Visayan Sea. Past experiences suggest therefore that this assumption will be met.

A second assumption is that small-scale fishing communities will support the initiatives and interventions proposed. At present many small-scale fishing communities, fisheries managers, and local government officials in the region equate area-based (zoning) approaches to fisheries

management as the equivalent of no-take Marine Protected Areas. The latter are often viewed as unacceptable at the community level since they are rarely designed in locations of importance to the life-cycle of important fish species and neither improves fish stocks, nor the community's income. The net result of such activities has been the loss of fishing areas for small-scale fishers and non-compliance with fisheries management measures in the "protected" areas. The outcomes of extensive community and stakeholder consultations in the participating countries during 2005 and 2006 suggest that the refugia concept is well accepted by small-scale fishing communities and local officials. To date fishing communities in Cambodia, Indonesia, Philippines, Thailand, and Viet Nam have expressed their strong support for the establishment and management of fisheries refugia in areas of critical fisheries habitats. Achievements at pilot fisheries refugia sites in the Philippines, Thailand, and Viet Nam to date indicate that this assumption will be met.

A further assumption is that the national governments will take action to implement management plans for critical habitat areas of specific fisheries refugia. It is likely that this assumption will be met since all governments adopted habitat specific National Action Plans in support of the regional Strategic Action Programme and the further development of the system of fisheries refugia is part of the agreed SAP.

H. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT:

The project intends to build on existing investments and the policy and scientific basis for the regional system of fisheries refugia established through UNEP/GEF South China Sea Project. The development of the fisheries refugia concept as a tool for integrating fish stock and habitat management was undertaken by the UNEP/GEF Regional Working Group on Fisheries in close collaboration with SEAFDEC, FAO, IUCN, and World Fish Center during the period 2003-2008.

The concept was elaborated and refined, and priority refugia sites identified, based on: the outcomes of regional and national level expert and fishing community consultations; national reports on fisheries, mangroves, coral reefs, seagrass, and wetlands from the seven participating countries of the South China Sea project; 135 habitat site characterisations prepared during the SCS Project; the SCS meta-database and GIS; and information contributed directly by fisheries and habitat focal points. This has been supported by three regional training courses and 12 national training seminars on the scientific and management aspects of operating the regional refugia system.

Cost effectiveness was a key criterion for development of the refugia initiative. The concept aims to improve the use of area-based approaches to fish stock and habitat management, whilst overcoming the problems associated with the emphasis on no-take Marine Protected Areas in the region. The latter include low fishing community acceptance, and high costs in terms of displacement of fishermen and enforcement. The fisheries refugia initiative addresses the present problems by drawing on fisheries management concepts that are easily understood at the fishing community level and emphasise the sustainable use of fisheries resources and their habitats rather than the prohibition of fishing.

There is consensus amongst the fisheries and habitat specialists of the SCS Project that the refugia concept represents an innovative approach for building fishing community support for area-based approaches to fisheries and habitat management, through which fish stock and habitat conservation objectives can be achieved simultaneously. The focus of the project on establishing operational management at 23 priority fisheries refugia sites will enable the efficient timing of site level activities required to ensure the transfer of lessons-learned between and amongst sites, and evaluation of the effectiveness of project interventions in achieving the medium and longer term resource and institutional objectives of the refugia system.



I. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY:

UNEP has been recognised by regional and International fisheries organisations as the appropriate organisation to implement initiatives in Southeast Asia that focus on the integration of fisheries and environment considerations due to it being the only United Nations programme whose core business is the environment. UNEP is also placed well to facilitate the multi-stakeholder, intergovernmental consultations required to ensure the close cross-sectorial consultation between fisheries and environment departments in the designation and management of fisheries refugia. This is particularly important in relation to the designation by Ministries of Environment of Marine Protected Areas to ensure that such areas are congruent with habitat areas of critical significance to fish stocks. This will involve the establishment of institutional mechanisms to effect the integration of habitat and marine biodiversity conservation considerations into fisheries management. UNEP has demonstrated its ability to achieve this and is evidenced by the Intergovernmental regional guidelines on fisheries refugia adopted by ASEAN and SEAFDEC.


PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the country endorsement letter(s) or regional endorsement letter(s) with this template).

NAME	POSITION	MINISTRY	DATE (Month, day, year)
Nguyen VAN TAI,	Deputy Director General Department of Environment ,	Ministry of Natural Resources and Environment, Vietnam	25 th March 2009
Agus PURNOMO,	Special Assistant Minister for International Environmental Issues and Partnership	Ministry of Environment, Indonesia	1 st August 2008
Analiza TEH,	Assistant Secretary Department of Environment and Natural Resources Foreign Assisted and Special Projects Office	Department of Environment and Natural Resources Philippines,	22 nd September 2008
Saksit TRIDECH,	Permanent Secretary Office of the Permanent Secretary	Ministry of the Natural Resources and Environment Thailand	16 th March 2009
HEAL, Lonh	Technical Director General	Ministry of Environment Cambodia,	

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.

Agency Coordinat or, Agency name	Signature	Date (Mont h, day, year)	Project Contact Person	Telepho ne	Email Address
Maryam Niamir- Fuller Director, UNEP Division of GEF Coordinat ion		April 14 th 2009	Takehir o Nakamu ra	+254- 20- 762388 6	takehiro.nakamura@un ep.org

“Improved Fisheries Management through an Ecosystems Approach to Fisheries by Development and Management of Refugia and Marine Protected Areas in the Eastern Gulf of Thailand”

Concept Note

Title of the action:	Improved Fisheries Management Through an Ecosystems Approach to Fisheries by Development and Management of Refugia and Marine Protected Areas in the Eastern Gulf of Thailand
Lot N°	Lot 8: Fisheries
Location(s) of the action: - <i>specify country(ies), region(s) that will benefit from the action</i>	(Eastern) Gulf of Thailand – Cambodia, Thailand and Vietnam
Total duration of the action (<i>months</i>):	48 months
Amount (<u>in EUR</u>) requested from the European Commission	1 200 000 Euro
Objectives of the action	<p>The development objective (overall objectives) is sustainable fisheries and healthy ecosystems in eastern Gulf of Thailand (Cambodia and bordering provinces in Vietnam and Thailand) and poverty eradicated along the coasts of the eastern Gulf of Thailand</p> <p>The objectives are to have:</p> <ul style="list-style-type: none"> • Capacity built up for the establishment of a well managed system of MPAs and fisheries resources conservation areas (<i>refugia</i>) for the management of commercially important fish stocks, endangered species habitats in the eastern Gulf of Thailand • Plans for the management of illegal and environmentally destructive fisheries coordinated among the Gulf of Thailand countries to reduce pressure on the ecosystems combined with programmes to identify alternative income to alleviate poverty • Experiences and knowledge shared about the implementation of ecosystems based fisheries among institutions and communities in Cambodia, Vietnam and Thailand as well as at the ASEAN regional level • A process supported to establish bi- and/or trilateral agreements on the management of fisheries and habitats (ecosystems) among Cambodia, Vietnam and Thailand
Target group(s) ¹⁹	<ul style="list-style-type: none"> • Fishing communities and fisher-folk (Cambodia, Thailand and Vietnam) • NGO staff • Staff from local and central government agencies (fisheries, environment) • Staff from international and regional organisations
Final beneficiaries ²⁰	Coastal fishing communities and fisher-folk

¹⁹ “Target groups” are the groups/entities who will be directly positively affected by the action at the action purpose level.

²⁰ “Final beneficiaries” are those who will benefit from the action in the long term at the level of the society or sector at large.

<p>Estimated results</p>	<ul style="list-style-type: none"> • Enhanced cooperation mechanism and information/experience exchange promoted within countries and between countries in the sub-region. • Better understanding and enhanced capacity of the ecosystem approach to fisheries and demonstrated added value of this concept in the fisheries management and the role of MPAs in the process. • A series of capacity building events, on-site training and awareness raising activities, including alternative livelihood have been provided to all stakeholders • Capacity, strengthened to monitor and record active fishing capacity in small scale/coastal fisheries, including incidences of illegal (IUU) fisheries by large-scale vessels in coastal waters. • Drafting of plans for ecosystems based management systems in Cambodia, Vietnam and Thailand initiated • A sub-regional framework, based on nationally implemented management areas (MPAs, <i>refugias</i>), identified in the Gulf of Thailand for trans-boundary resource management • Consultative workshops organised to share the knowledge and experiences of the implementation of ecosystem approach to fisheries in the region.
<p>Main activities</p>	<ul style="list-style-type: none"> • Promotion of and capacity building for Ecosystems based management, including MPAs and designation of refugia • Identifying alternative livelihoods for coastal communities to reduce fishing pressure and poverty alleviation • Addressing fishing capacity by records of vessels and gear to reduce illegal and destructive fishing • On-site training and training of trainers in border areas • Promotion of bi- and trilateral agreements on fisheries and habitat management • Studies and research as needed to support the processes indicated in the proposal

PROPOSED REGIONAL POLICY RECOMMENDATIONS TO IMPROVE FISHERIES MANAGEMENT IN SOUTHEAST ASIA (2009)

**(Adopted at the 2nd Meeting of the Regional Advisory Committee on
Fisheries Management in Southeast Asia, 2-4 September 2009)**

In response to the current declining status of the world fishery resources due to unsustainable utilization, concerns were expressed by the international society on the need to improve the current marine and inland fisheries management framework and practices. In line with such concern and to ensure sustainable management of fisheries in the Southeast Asian region, the SEAFDEC Council during its 40th Annual Meeting held in 2008 in Bali, Indonesia, endorsed the establishment of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC) as a subsidiary body of the SEAFDEC Council. The main role of RAC is to provide technical/scientific advice to the SEAFDEC Council for the improvement of fisheries management in Southeast Asia and to assist the SEAFDEC Member Countries in achieving sustainable utilization of fisheries resources through improved fisheries management for food security, sustainable livelihoods of the people, and economic development and integration in Southeast Asia.

RECOMMENDATIONS ON REGIONAL FISHERIES MANAGEMENT ISSUES

In order to identify and discuss the important fisheries management issues of the Southeast Asian region and develop the regional policy recommendations to improve fisheries management, the Second Meeting of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC) was organized from 2 to 4 September 2009 in Bangkok, Thailand. During the Meeting, priority issues relevant to fisheries management of the Southeast Asian region that emerged during the recent years were reviewed and identified, and the required policy recommendations for consideration by the Council were proposed as follows:

1) Enhancing Sustainability of Fishery Resources and Stocks

- i.) Considering the deterioration of fishery resources/stocks in Southeast Asian waters, regional collaborative management efforts to enhance the inland and marine fisheries resources and stocks are required.
- ii.) Goals and roadmap for the enhancement of resources/stocks should be developed by SEAFDEC, in consultation with the Member Countries and other relevant regional/international organizations. This should also be incorporated into the national/regional policy framework, and taken into consideration in the further development of activities at the national and regional levels.
- iii.) Required actions (immediate and long-term) on fisheries resources enhancement should be further identified and elaborated on, and to be incorporated into the national/regional program of the Member Countries, SEAFDEC and other relevant organizations. The activities, covering both inland and marine fisheries, could be tentatively classified into clusters, as follows:
 - o Conservation and restoration of marine and freshwater habitats (*e.g.* mangrove forests, inundated forests, tidal flats, artificial reefs, sea grass and seaweed beds, etc.), including establishment of fisheries *refugia* and other forms of marine and inland protected areas, to enhance fishery resources/stocks (*also consider the experience of other organizations, e.g. United Nations Environment Programme/Global Environment Facility/South China Sea (UNEP/GEF/SCS),*



- Mekong River Commission (MRC), etc., in the implementation of relevant activities);*
- Stock enhancement of heavily-exploited and economically-important species (*also consider the key elements for successful stock enhancement program based on the experience of SEAFDEC/AQD in the implementation of relevant programs);*
 - Assessing the impacts of habitat restoration and stock enhancement activities on the environment, fishery resources, and socio-economic conditions of fishers;
 - Improvement and implementation of effective fisheries management, *e.g.* management of fishing capacity (freezing of capacity), enforcement of regulations (*e.g.* zoning, gear restriction, seasonal restriction), promotion of rights-based fisheries, etc.;
 - Promotion of responsible fishing operations, and reduction of the impacts from fishing operations to fishery resources and eco-systems (*also consider the Draft Plan of Action for the Reduction of the Impacts of Fishing on Coastal and Marine Waters in Southeast Asia);*
 - Maximizing the use of existing data and information (available in Member Countries, SEAFDEC and other organizations) to visualize the overall pictures of the ecosystem as well as the status and trends of fishery resources/stocks to support policy planning and management for sustainable fisheries; and
 - Enhancing the involvement of local governments and stakeholders' participation and public awareness, as well as integration of socio-economic aspects in the resources and stock enhancement activities.
- iv.) Considering that there are several clusters of activities that are envisaged to contribute to the sustainability of the fishery resources/stocks, a holistic approach should be considered in the formulation and implementation of activities.
- v.) Technical Working Groups (TWGs) could be established or technical consultations could be organized, as and when necessary, to further discuss and elaborate on the relevant issues and follow-up on the recommendations made by RAC. The establishment of TWGs or the conduct of the consultations could be done either under RAC or within the existing SEAFDEC Program Frameworks.
- vi.) SEAFDEC, as the RAC Secretariat, should explore and enhance its collaboration with other relevant international/regional organizations, *e.g.* UNEP/GEF/South China Sea Project, Coral Triangle Initiatives (CTI), FAO, MRC, etc., in the TWG and consultation activities in order to mobilize their experiences and obtain their views that could be incorporated in the RAC policy recommendations for the enhancement of resources/stocks, as well as to heighten the possibility that the recommendations are incorporated into the policy framework and/or activities of other relevant organizations.

Immediate Action by SEAFDEC on Developing the Strategy for Enhancements (see Appendix 1, developed after the 2nd RAC Meeting)

2) Improving Data and Information Collection on Fishing Vessel Record and Catch Documentation Scheme

- i.) The SEAFDEC Member Countries should continue their attempts in assessing the current level of fishing capacity through vessel registration and/or fishing licensing system of commercial fisheries and small-scale/coastal fisheries (or gear registration in the case of inland fisheries). Vessel registration record of the respective countries should also be regionally harmonized to ensure reliable and comparable statistics and information, which are useful for policy planning and management of fisheries (*also*

consider the Vessel Record and Inventory Survey Forms for large-scale and coastal fishing vessels developed by SEAFDEC).

- ii.) To improve the catch documentation scheme and fishing logbook system by the Member Countries, the following issues should be considered:
 - o establishment of guidelines for the implementation of the catch documentation in the region
 - o making the catch documentation scheme applicable to commercial and small-scale fisheries
 - o sharing experiences on the best practices on the development of the fishing logbook system
 - o exploring new devices for better tracking such as electronic tagging
 - o linking the fishing logbook system with the vessel registration and/or licensing system as appropriate; and
 - o enhancing capacity building.
- iii.) The Logbook System should be used by the SEAFDEC Member Countries, starting from commercial large-scale fishing vessels and later on to be expanded to small-scale vessels, to improve their respective catch documentation schemes. Information to be recorded in the Logbook should be simple enough for the fishermen to complete and suitable to support management for sustainable fisheries, particularly the catch by fishing areas.
- iv.) SEAFDEC (as RAC Secretariat) should continue to monitor the issue and compile the information on the status of the implementation of SEAFDEC Member Countries in response to the EU requirements, the problems/difficulties faced by the countries as well as appropriate solutions from the regional perspective. The issues and relevant information should be reported to the SEAFDEC Council for consideration and recommendation particularly on the technical support required from SEAFDEC.

Immediate Action by SEAFDEC on Data and Information Collection by SEAFDEC:

Reviewing the appropriate fishing logbook system used by individual Member Countries a long line with fisheries management framework to ensure the sustainable development of capture fisheries. Monitoring the implementation of EC regulation in affected countries, in order to identify the issues required for capacity building.

CONSIDERATION BY THE PROGRAM COMMITTEE

The proposed regional policy recommendations to improve fisheries management in Southeast Asia (2009) which is the outcomes from the 2nd RAC Meeting, will provide the future directions /approaches for enhancing the sustainable development of fisheries through the enhancing fisheries resources strategy and improving of the information collection system using the logbook system and catch documentations schemes. It is expected that the current SEAFDEC programs will support the policy recommendations for fisheries managements made at the Regional advisory committee. In this regard, the Committee is requested to consider and support these proposed policy recommendations on above approaches into the proposed current SEAFDEC programs.

Strategy for Enhancing Fisheries Resources in Southeast Asia SEAFDEC/SEC

I) Introduction

In the Southeast Asian Region, declining of fisheries resources in both demersal and pelagic fishes in the coastal and offshore areas directly impact to the fishing industries which was quick growth in the past 2 decade. This also pushes large numbers of fishing vessels to perform illegal fishing outside the national jurisdiction or on the foreign executive economic zone and high seas.

Several approaches on enhancing marine and inland fisheries resources have been promoted at national levels towards conservation and management of coastal resources since late of 1970s. However, due to strong impacts to fisheries resources which may comes from the changing of climate and human activities, the understanding and managing of the enhancement fisheries systems are needed to be considered. In addition, the fact that many countries tended to favour politically easy enhancement while refraining from taken needed but politically more difficult management action (*e.g.* reducing fishing capacity or allocating rights) has also helped discrediting the approach among fishery scientists.

Nevertheless, interest might be renewed because countries are now more decisively addressing the core issue of overcapacity; most high value resources are declining; and the recent proliferation of modern tagging technology and progress in visual assessments of reefs stocks provide a way to more convincingly assess the impacts of stock enhancements or artificial reefs. With the progress now at hand in rearing marine animals, the potential is growing but the experience, protocols, guidelines, etc., on how to combine fisheries enhancement and management are still missing.

II) Approaches available

Conventional fisheries management measures such as regulation of minimum mesh sizes, closed areas and closed seasons have been used to counteract in situations of high fishing pressure or degraded environments, but these measures can be difficult to enforce and do not always offer the possibility to increase or maintain production levels. Improvements in productivity of habitats are also important that may come, inter alia, from sustainable enhancements of the habitat (*e.g.* through artificial reefs), primary productivity (protecting fishery refugia) and recruitment (*e.g.* through artificial propagation and restocking/ranching). To enhance the fisheries resources and achieve the fisheries sustainability, therefore such that 3 below approaches should be considered;

1) Protecting the fisheries refugia would be a solution to consider: Fisheries refugia as defined by the UNEP/GEF/SCS RWG-F are, geospatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical stages of their life cycle, for their sustainable use. The guidelines for the establishment and management of fisheries refugia that constitute part of the ASEAN SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia was established recently; while taking advantage use of the available key results from the SCS project which addressed key barriers to effective fisheries habitat management in the South China Sea and Gulf of Thailand including: limited information regarding fish life-cycle and critical habitat linkages and the role that marine habitats play in sustaining fisheries; low level understanding amongst stakeholders, including fisher folk, scientists, policy makers, and fisheries and habitat managers of the linkages between fish stocks and habitats; limited community acceptance of protected area-based approaches to marine management in Southeast Asia; and, limited experience in national fisheries and environment departments and ministries with respect to the

implementation of integrated fisheries and habitat management approaches. 52 known fisheries refugia have been identified and characterized.

2) Artificial propagation and use of Aquaculture technology as additional tools for Stock Enhancement would also be needed: (i) for areas in which a species cannot reproduce naturally due to irremediable loss of critical habitat; (ii) to maintain fisheries despite recruitment overfishing in places and situations where conventional management does not work; or (iii) to boost stock rebuilding.

3) Physical modifications are likely to be acceptable when they aim in fact at re-establishing natural conditions (e.g. reopening coastal lagoons and wetlands, replanting mangroves or seagrass beds). Artificial reefs made with using redundant vessels, quarry rocks and concrete structures may be adequate to create additional habitats (e.g. in soft bottoms ecosystems) in order to increase biodiversity; attract predators; provide reproductive, feeding or nursery space; or establish biofilters (e.g. with oyster or mussels to re-establish water quality when nutrient loads are too high). Artificial reefs have also been used as “anti trawl” devices.

III) SEAFDEC Approaches on the Enhancement of Fisheries Resources

[First phase (mainly 2001-2006)]

Based on the 1st phase resources enhancement projects implemented under the TD and AQD program in 2001-2006, the approaches were mostly focused on the reviewed enhancements made by Member Countries. Even though, many attempts have been worked on promotion of responsible fishing and practices to reduce the impacts of fishing to critical life cycle of some commercial species to support the enhance of fish stock, but little have been progressed.

Taking into account, the Workshop on Enhancing Coastal Resources regarding to the Artificial Reefs, Stationary Fishing Gear Design and Construction and Marine Protected Areas organized by SEAFDEC Training Department from 30 September to 3 October 2003 at SEAFDEC/TD, Samut-prakan, Thailand, It was suggested that all participating countries have in place the national legislation, policy and plan including resource enhancement activities to promote conservation and management of marine resources. In this connection, Future approaches on enhancing of fisheries resources should strengthen and support the national policy/implementation including establishing of the fisheries refugia concept and improve the productivity of the tidal flat. The monitoring and assessment of the impacts from enhancements are also importance subjects, where many enhancing programs at national level require.

In term of using aquaculture as tools to enhance the stock since 2005 to present, most of research works have been focused for the Species under International Concern such as *seahorses* (*Hippocampus barbouri*, *H. comes*, and *H. kuda*), humphead wrasse (*Cheilinus undulates*), abalone (*Haliotis asinina*), angelwing clam (*Pholas orientalis*) and sea cucumber (*Holothuria scabra*). To contribute these outcomes to Member Countries, Regional Training/workshops have been organized as well as manuals for seed production of some enhanced species covers management of broodstock, spawning induction, larval rearing, settlement preparation, and management of nursery systems have been produced.

[Second phase (2010-2015)]

Based on the above results and reviews of the SEAFDEC approach in first phase, and recent advanced acknowledgement on the enhancement approach of fishery resources, the following issues/subjects needed to be focused and prioritized to be tackled with as the urgent enhancement approach of fishery resources and fish stocks in the Southeast Asia which will be implemented as the second Phase programs (2010-2015) by SEAFDEC with the assistance led by the Japanese Trust Fund Programs from 2010 to 2015 and the Regional Advisory Committee.



[Focus point]

- 1) Promotion of practical approach for fishery refugia both inland and marine including commercial species and trans-boundary pelagic species and shared stock species
Remark) New TF5 activities by TD will support these activities. (TD in collaboration with SEC)
- 2) Research and development of aquaculture and propagation technology as additional tools for Stock Enhancement, and promotion of the appropriate aquaculture-based fisheries enhancement.
Remark) As to aquaculture and propagation technology, activities in TF5 through both seed production conducted by AQD and enhancements of the habitat conducted by TD will support them. (TD and AQD)
- 3) Enhancing the productivity of fishing grounds led by Tidal Flats in collaboration with Member Countries and as a part of the community based fisheries resources management.
Remark) New TF5 activities by TD will support these activities. (TD)
- 4) Technical supports to the national policy on enhancement of fisheries resources and fish stock to achieve the sustainable enhancements
Remark) RAC and several related WS will support these activities. (SEC in collaboration with TD and AQD)

Through these prioritized activities, we can advance to develop the coastal offshore fishery enhancement system and promote environment-friendly precautionary approach to capture fishery.

STATEMENT

By Dr. Simon Funge-Smith
FAO Regional Office for Asia and the Pacific



FAO programme in fisheries & aquaculture
SEAFDEC & SE Asia member countries



Simon Funge-Smith
FAO Regional Office for Asia and the Pacific

 **FAO Code of Conduct for Responsible Fisheries (CCRF)**

- In line with WSSD, CBD and global call for implementation of ecosystem approaches
- The **Ecosystem Approach to Fisheries** is a way of making the CCRF **operational**
 - Integrated management system that promotes sustainable development
 - **Balances** human well-being **and** ecological well-being
- Integrated management focus includes all important aspects of an ecosystem and different activities that impact
 - Humans
 - Habitats
 - Fisheries resources (both target spp and associated spp)
 - Vulnerable plants and animals
 - Harvesting, polluting, degrading habitats etc



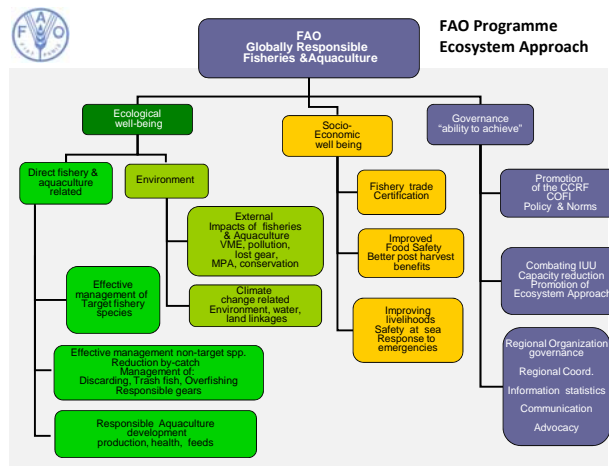
 **Ecosystem Approach to Fisheries (EAF) applied to programme development**

Sustainable Development (EAF)

Ecological well-being

Human well-being

Governance - ability to achieve -

 **FAO workplan is now organized to combine field programme with normative type activities**

- Under the results based arrangement there remain familiar thematic areas of FAO's work
 - Information management and statistics FIES
 - Fisheries economics, policy and liaison FIEP/FIEL
 - Fisheries industry and utilization FIU
 - Fishery industry and technology FIIT
 - Fishery resources management (inland and marine) FIMF
 - Aquaculture resources management FIMA



 **Non-regular programme**

- FISHCODE - project resource identification & donor funding programme management unit
 - Multi-donor programme that identifies projects and programmes
 - donors and other funding organizations (e.g. World Bank).
- Emergencies - working group that addresses fisheries related aspects of emergencies;
 - providing technical support to project development,
 - coordination of technical advisory support
 - developing best practice and advisory input (under normative programme), to better assist response and decision making in future emergencies.

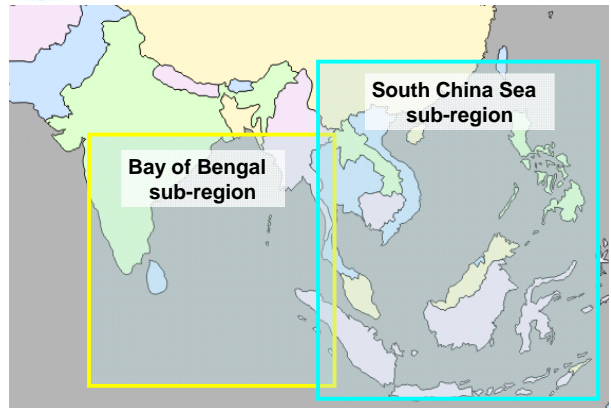


FAO Global normative work and processes

- Committee on Fisheries (COFI)
 - related sub-committees on trade (COFI-SCT) and aquaculture (COFI-SCA)
- Development of a binding agreement on Port State Measures
- Recommendations for a Global Vessel Record
- Fisheries in the Deep Sea (Technical consultation)
- Development of FAO guidelines for aquaculture certification (Technical consultation)
- FAO ad hoc CITES advisory panel on aquatic species of commercial interest
- International guidelines on By-catch in fisheries (expert consultation)



Strategically – looking to strengthen fisheries management in two sub-regions



What is of interest to SEAFDEC member countries and the organizations?

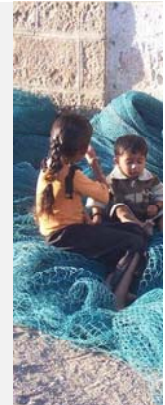


These would be programmes or projects that are being undertaken or planned in the member countries of SEAFDEC

That may be of importance for collaboration, or offer opportunities for improving member countries input to regional or international decision making.

Asia-Pacific Fishery Commission Secretariat (APFIC)

- Reviewing status & trends
- Resources and issues under review
- Capacity building
- Communication and awareness
- Advocacy and participation in regional and global processes.
- Current themes
 - Livelihoods
 - Promotion of Ecosystem Approaches
 - Regional consultative forum 2010
 - improving assessments
 - reviewing possible impacts of climate change on fisheries and aquaculture in the APFIC region
- APFIC remains a committed partner and the APFIC mechanisms offers an effective way to integrate FAO and SEAFDEC programmes.



Regional Fisheries Livelihood Project

- Cambodia, Indonesia, Philippines, VietNam, East Timor, Sri Lanka, 4 years
- Funded by Kingdom of Spain
- The major RFLP outputs are:
 - Co-management mechanisms for sustainable utilization of fishery resources
 - Measures to improve safety and reduce vulnerability for fisher communities
 - Measures for improved quality of fishery products and market chains
 - Diversified income opportunities for fisher families
 - Facilitated access to microfinance services for fishers, processors and vendors; and
 - Regional sharing of knowledge in support of livelihood development and reduced vulnerability for fisher communities and of sustainable fisheries resource management.



Linking EAF to the Bay of Bengal LME program

“To establish a Strategic Action Programme to protect the health of the ecosystem and manage the living resources of the Bay of Bengal on a sustainable basis, to improve the food and livelihood security of the region’s coastal population”

- Development of a SAP
- Resource management
- Understanding the environment
- Ecosystem health
- Communications





Management and reduction of by-catch (GEF) REBYC II

- **Under development as GEF project**
 - Malaysia, Philippines, Indonesia, Vietnam, Papua New Guinea, Thailand (+SEAFDEC)
- **Objective**

“Aquatic resources and stocks protected, and biodiversity maintained and enhanced in the Coral Triangle/South China Sea (SCS) region through application of strategies and technologies for fisheries by-catch management”
- **Main outputs**
 - Policy and decision framework for by-catch management strategies & fishery sector actions
 - Development & demonstration of by-catch management and reduction technologies
 - Monitoring and evaluation framework for by-catch management
 - Roll out of by-catch management and reduction methods by private sector in some key fisheries
 - Communication, awareness raising and dissemination of lessons learned



FAO Country projects

- **Cambodia**
 - Food safety in aquaculture Cambodia
- **Lao PDR**
 - Support for development of fisheries and aquaculture legislation
 - follow development of comprehensive national policy and strategy for fisheries and aquaculture (in preparation)
- **Indonesia**
 - American Red Cross project (Aceh)
 - post tsunami, co-management; improved marketing of fisheries products.
- **Malaysia**
 - no country sectoral project sectoral requests received/prioritized



FAO Country projects



- **Myanmar**
 - Italian programme fisheries component for fisheries and forestry management in the delta area
 - cyclone Nargis rehabilitation programme in fisheries
- **Philippines**
 - a number of emergency requests have included fisheries
 - sectoral fishery related project requests have not been received/prioritized.
- **Thailand**
 - Organization of small scale aquaculture producers for certification
 - review of feasibility for insurance of shrimp aquaculture.
- **VietNam**
 - Fishing vessel capacity assessment and development of NPOA
 - Integrated management of Tua Thien Hue Lagoon



FAO Regional Technical Cooperation Programme

- **Tuna post-harvest improvement**
 - INFOFISH
 - Maldives, Sri Lanka, India, Pakistan, IR Iran
- **Improving use of feeds in cage aquaculture**
 - NACA
 - Thailand, China, VietNam
- **Microfinance in inland fisheries**
 - APRACA (in preparation)
 - Cambodia, China, India, Malaysia and Myanmar



Regional processes for improving fishery and aquaculture governance

- **Partnership**
 - Ongoing coordination and collaboration
 - APFIC, BOBLME, RFLP, FAO regular programme
 - SEAFDEC, NACA, BOBP-IGO, ASEAN
- **Processes**
 - RPOA
 - AFCF
 - SEAFDEC Andaman Sea
 - NACA AGM
 - Advice and support for EU Catch certification



Thank You!

STATEMENT

By Mr. Suriyan Vichitlekarn
ASEAN Secretariat

 <p style="text-align: center;">ASEAN-SEAFDEC Strategic Partnership – From “Collaborative Projects” to “Strategic Partnership”</p> <p style="text-align: center;">32nd SEAFDEC Program Committee Meeting 16-18 November 2009 Kota Kinabalu</p> <hr/> <p style="text-align: center;"><i>One Vision, One Identity, One Community</i></p>	<p style="text-align: center;">ASEAN-SEAFDEC Strategic Partnership</p> <hr/> <ul style="list-style-type: none"> ◆ ASEAN – a rules-based inter-governmental organisation ◆ Realisation of ASEAN Community in 2015 ◆ ASEAN-SEAFDEC Cooperation <ul style="list-style-type: none"> * FCG established in 1999 * ASEAN-SEAFDEC Strategic Partnership (ASSP) formalised in 2007 ◆ ASSP Program <ul style="list-style-type: none"> * Core component of ASEAN program on fisheries * Appreciation by ASEAN Member States and Sectoral Bodies ” <hr/> <p style="text-align: center;"><i>One Vision, One Identity, One Community</i></p>
<p style="text-align: center;">SEAFDEC in ASEAN Process</p> <hr/> <ul style="list-style-type: none"> ◆ Implementation of programs/ projects under FCG/ASSP ◆ Implementation of ASEAN Integrated Food Security (AIFS) Framework <ul style="list-style-type: none"> * Raising importance of fisheries contribution to food security * Supporting the development of project concept notes on <ul style="list-style-type: none"> ▲ Strengthening Food Security Arrangements ▲ Promoting Sustainable Food Production ▲ Identifying and Addressing Emerging Issues Related to Food Security <hr/> <p style="text-align: center;"><i>One Vision, One Identity, One Community</i></p>	<p style="text-align: center;">SEAFDEC in ASEAN Process</p> <hr/> <ul style="list-style-type: none"> ◆ Implementation of ASEAN Integrated Food Security (AIFS) Framework <ul style="list-style-type: none"> * Jointly contribute as regional inputs to the on-going development of FAO Global Programme on Fisheries and Aquaculture on Poverty Alleviation and Food Security ◆ Formulation of ASEAN Multi-sectoral Framework on Climate Change: Agriculture and Forestry towards Food Security (AFCC), focusing on fisheries ◆ Proposed “Fish for the People 2020” Conference with support from AMAF and AMAF Plus Three <hr/> <p style="text-align: center;"><i>One Vision, One Identity, One Community</i></p>
<p style="text-align: center;">SEAFDEC in ASEAN Process</p> <hr/> <ul style="list-style-type: none"> ◆ Broadening ASEAN cooperation in fisheries with Dialogue Partners (i.e. ASEAN Plus Three)  <hr/> <p style="text-align: center;"><i>One Vision, One Identity, One Community</i></p>	<p style="text-align: center;">Future Perspectives of ASSP</p> <hr/> <ul style="list-style-type: none"> ◆ Contribution of fisheries to ASEAN Community building by 2015 <ul style="list-style-type: none"> * Food safety/ SPS * Fisheries quality management system – HACCP-based systems, good laboratory practices, application for SMEs * Good aquaculture practices (as a regional product standard), including appropriate use of veterinary drugs * Strategic alliances and joint approaches among AMSS and with the private sectors * Engaging CSOs (fishers’ organisations) in the integration of fisheries sector <hr/> <p style="text-align: center;"><i>One Vision, One Identity, One Community</i></p>



Future Perspectives of ASSP

- ◆ Contribution of fisheries to ASEAN Community building by 2015
 - * Combating IUU fishing (considering the economic and security implication)
 - * Enhancing food security and safety
 - * Promoting sustainable use of coastal and marine environment
 - * Promoting sustainable management of natural resources and biodiversity
 - * Responding to climate change and addressing its impacts

Future Perspectives of ASSP

- ◆ From “collaborative projects” to “strategic collaborative program”
 - * Big picture (holistic approach in Project Cycle Management) and inter-linkages among projects towards the goals and common interests
 - * Built upon comparative advantages
 - * M&E and results-based reporting (outputs, outcomes and policy making process), tools for
 - ▲ Project effectiveness
 - ▲ Management efficiency;
 - ▲ Accountability with the concerned stakeholders.

Future Perspectives of ASSP

- ◆ From “collaborative projects” to “strategic collaborative program”
 - * Strong M&E system with results-based reporting will enable greater:
 - ▲ Awareness of contribution and the various factors that come into play;
 - ▲ Appreciation from stakeholders (e.g. Ministries, donors, community) of the program costs and benefits; and
 - ▲ Potential for more strategic program support from donor agencies
- ◆ Continued engagement in initiatives on food security (AIFS) and climate change (AFCC)

Future Perspectives of ASSP

- ◆ “Fish for the People 2020” Conference
 - * Joint regional development towards vision and perspectives of fisheries towards 2020
 - * A platform for strengthening regional cooperation on fisheries in the ASEAN region (ASSP and beyond)
 - * Raise profiles of the fisheries sectors and ASSP to high level authorities
 - * Strengthen ASSP programme towards project effectiveness (coordinated efforts, synergies and greater impacts), management efficiency and accountability with the concerned stakeholders

STATEMENT

By Mr. Ibrahim bin Abdullah
Colombo Plan



THE COLOMBO PLAN
For Cooperative Economic and
Social Development in Asia and the Pacific


Colombo Plan Established in 1951...




Background

- A regional inter-governmental organisation.
- Conceived in Colombo, nurtured in Australia, born in London.
- For Cooperative Economic and Social Development in the Asia and Pacific region.
- A partnership concept of self-help and mutual-help for socio-economic development of member countries.
- Its membership has grown from the original seven Commonwealth countries to 26, including non-Commonwealth countries.

Member Countries




Algeria (1988)	Australia (1950)	Bangladesh (1972)	Bahrain (1982)	Bhutan (2008)	Brunei (1972)
India (1950)	Indonesia (1958)	Iran (1974)	Japan (1951)	Korea (1952)	Laos (1951)
Malaysia (1957)	Mexico (1983)	Mozambique (2001)	Myanmar (1952)	Nepal (1952)	New Zealand (1950)
Pakistan (1950)	Philippines (1951)	Republic of China (1979)	Singapore (1958)	Si Lanka (1950)	Sri Lanka (1951)
U.S.A. (1951)	Vietnam (2003)	Canada (1951-1952)	United Kingdom (1951-1952)		

Objectives

- Promote technical cooperation and assist in the sharing and transfer of technology among member countries.
- To keep under review relevant information on technical cooperation between the member governments, multilateral and other agencies with a view to accelerating development through cooperative effort.
- To facilitate the transfer and sharing of the developmental experiences.

Colombo Plan Structure



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    graph TD
      CCM[Consultative Committee Meeting] --> CPC[Colombo Plan Council]
      CPC --> CPS[Colombo Plan Secretariat]
      CPS --> SG[Secretary General]
      SG --> PD[Programme Director]
      PD --> PO[Programme Officers]
      PO --> SS[Support Staff]
      
      CCM --- CCM_desc[Meets on biennial basis, hosted by a member country]
      CPC --- CPC_desc[Meets on a quarterly basis, attended by representatives of member countries with missions in Colombo]
      SG --- SG_desc[Appointed by CP Council for 4-year tenure]
      PO --- PO_desc[Appointed by CP Council upon Recommendation by SG for 4-year tenure]
    
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Colombo Plan Funding

- Administrative costs of the Council and the Secretariat are borne *equally* by all member countries.
- Programmes are funded by voluntarily contributions by member countries.
- Developing member countries are also encouraged to meet local currency costs when they host CP Programmes.
- Training programmes are also funded by contributions from non-member governments, regional / international organisations, public and private sector foundations.
- e.g. OPEC Funds, United Nations Agencies, ADB, etc.

Colombo Plan Programmes



PPA/E Programme

- Established in 1995 with the objective to develop human capital in the public sector.
- Prioritized areas:
 - ✓ Public Governance
 - ✓ Economic Management
 - ✓ Strategic Management
 - ✓ IT Management
 - ✓ Food Security

PPA/E Programme (cont.)

- The programme for Environment was established in 2005 through funding from the Thailand Government from 2005-2007.
- The programme covered subjects such as:
 - ✓ Climate change
 - ✓ Environmental Planning
 - ✓ Air Pollution Management
 - ✓ Industrial Ecology
- Partner agencies: the Thailand International Development Cooperation Agency (TICA), Malaysia Technical Cooperation Programme (MTCP), India Millennium Fund, Pakistan Technical Cooperation and Singapore Cooperation Directorate.

LTSP Programme

- **was a hallmark of the Colombo Plan during its early years until 1989.**
- **On the recommendations of the 38th Consultative Committee Meeting held in Colombo in 2001, the LTSP was re-established in 2005.**

LTSP Activities 2009

Countries	University	Areas of studies	Number of Scholarships
Republic of Korea	KDI School of Public Policy, Republic of Korea	Public Policy	7
Malaysia	University Science Malaysia,	Social Science	10
Malaysia	University Putra Malaysia, Malaysia	Agriculture	10
Malaysia	Institute of Diplomacy & Foreign Relations, National University of Malaysia	Strategy & Diplomacy	7
Malaysia	International Islamic University of Malaysia	Islamic Banking	10
Singapore	National University of Singapore (NUS)	IT Management	
Singapore	Singapore Management University (SMU)	Law Business Administration	2
Singapore	Nanyang Technical College (NTC)	Administration	
Thailand	9 Universities in Thailand	Various fields	25

PPSD Programme

- Established in 1995.
- The objective - to facilitate the development of the private sector in the developing member countries.
- Focus on capacity building for development of SMEs.
- For start up, PPSD received a voluntary contribution from the Government of Korea through KOICA.
- Actively supported by member countries and donor agencies such as APO, Malaysia Productivity Centre (MPC), India Millennium Fund.
- Programmes scope such as WTO and trade issues, entrepreneurship development and industrialization policy.

DAP Programme

- Establishment in 1973.
- Focus on enhancing human resources development in member countries, particularly for those involved in the treatment and rehabilitation of addicts in the public sector, NGOs and the community and in drug demand reduction activities.
- the DAP has embarked on several innovative strategies including faith-based approach in drug demand reduction, drug treatment and rehabilitation including the establishment of outreach and drop in centres and the introduction of life skills to youth.
- February 2009 - CPDAP established a Training Arm, Asian Centre for Certification and Education of Addiction Professionals (ACCE).

Asian Centre for Certification and Education of Addiction Professionals (ACCE)

- ACCE provides a wide range of technical assistance relating to the field of treatment and rehabilitation
- Aims to enhance the human resource development in member countries
- ACCE is a part of the global initiative funded by the Bureau for International Narcotics and Law Enforcement Affairs of US Department of State (INL) and with a special collaboration with the National Association of Alcohol and Drug Abuse Counsellors (NAADAC) of USA.

Achievements



Achievements

No	Country	DAP	ENV	LTSP	PPA	PPSD	Sub Total
1	Indonesia	1190	9	7	94	95	1395
2	Afghanistan	1367		1	16	9	1393
3	Sri Lanka	819	23	14	183	137	1176
4	Thailand	771		3	87	83	944
5	Philippines	765	8	7	83	79	942
6	Malaysia	770	17	1	58	77	923
7	Pakistan	442	6	5	102	89	644
8	India	276	4		87	84	451
9	Maldives	299	7	7	73	49	435
10	Nepal	210	11	10	92	89	412
11	Bangladesh	218		1	89	65	373
12	Vietnam	169	17	7	42	55	290
13	Lao P.D.R	127	4	3	75	56	265
14	Singapore	241			3	8	252

Achievements

No	Country	DAP	ENV	LTSP	PPA	PPSD	Sub Total
15	Bhutan	105	11	7	73	45	241
16	Iran	28	13	2	95	91	229
17	Myanmar	49	8	8	82	82	229
18	Brunei Darussalam	159			2	1	162
19	Fiji	59		1	41	36	137
20	Korea	112				10	122
21	Mongolia	23	1	2	23	27	76
22	PNG	19		3	25	20	67
23	USA	55					55
24	Australia	30					30
25	Japan	2					2
26	Non Member Countries	150					150
27	Participants without Details	3163					3163
Grand Total		11556	139	89	1458	1316	14558



Colombo Plan Staff College (CPSC)

- Established in 1973 with the support of member governments of the Colombo Plan
- Functions as a specialised agency for the Colombo Plan
- Located in Manila, Philippines
- Focus on quality improvement in technician education and vocational training for technician teacher educators and trainers

COLLABORATION WITH SEAFDEC

- Since 1995 – the CP member countries participated in 25 SEAFDEC fisheries development programmes such as:
 - Fish quality assessment.
 - Seafood safety.
 - Fish processing and packaging.
- Looking forward to continue fruitful collaboration with SEAFDEC:
 - market oriented or policy oriented training programmes.
 - in the spirit of South-South Cooperation – develop collaborative training programmes.

CLOSING REMARKS

By Dr. Chumnarn Pongsri, SEAFDEC Secretary-General

Distinguished Members of the SEAFDEC Program Committee,
SEAFDEC Senior Officials,
Representatives from our Collaborating Partners,
Ladies and Gentlemen, Good Evening!

It pleases me to note that within only three days of deliberations, we came up with tangible recommendations on the programs and activities that SEAFDEC has undertaken and will undertake, for the sustainable development of fisheries in the region. Our recommendations would be submitted to the SEAFDEC Council during its forthcoming meeting in April 2010 for consideration, endorsement and policy guidance. As I mentioned in my Opening Remarks, the specific programs covered by the FCG-ASSP collaborative mechanism would be submitted to the two-day FCG-ASSP Meeting which will be convened from tomorrow until Friday, for submission later to the higher authorities of the ASEAN, for consideration and endorsement.

Moreover, we have also taken note of your valuable inputs and suggestions during our exhaustive discussions on the progress of the proposed ASEAN-SEAFDEC Conference on Sustainable Development of Fisheries for Food Security Towards 2020. As the Program Committee is also part of the Advisory Committee for the Conference, a summary of our suggestions on this matter would be presented as our inputs during the deliberation on the Agenda on the Conference during the FCG-ASSP Meeting which is also considered as a preliminary session of the Conference Advisory Committee.

As we are coming to the closing of this Meeting, I would like to express my gratitude again to all of you for your cooperation and support during our three-day meeting. I am glad that we have concluded this Meeting with a true spirit of magnanimity and solidarity. As this is the first Program Committee Meeting that I have chaired, I want to assure the Committee that I will do my best to rein SEAFDEC through our programs and activities, towards achieving our goal of sustainable fisheries development for food security of the peoples in this region.

Ladies and Gentlemen, with a tall order vested on me to strengthen SEAFDEC and ensure that our program and activities address the needs and requirements of the countries in the Southeast Asian region I would continue to seek the assistance of the Program Committee to help us achieve such goals.

Lastly, while hoping that such request would be acceded to, I now declare the 32nd Meeting of the Program Committee closed. Thank you once again and good day!