



PROJECT DOCUMENT

ACHIEVEMENTS FOR YEAR 2019

Project ID: 201301003

Program Category	ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title	Promotion of Sustainable Fisheries Resources Enhancement Measures in Critical Habitats/Fishing Grounds in Southeast Asia		
Program Strategy No.	I	Total Duration	2015 - 2019
Lead Department:	Training Department (TD)	Lead Country	None
Donor/Sponsor:	Japanese Trust Fund (JTF)	Total Donor Budget	USD287,349
Project Partner:	None	Budget for 2019	USD 50,850
Project leader:	Isara Chanrachkij / TD	Involved Country	All Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description:

The project involves the identification of appropriate resource enhancement tools for the region in order to develop fisheries resource enhancement and habitat conservation measures/analysis and diagnosis of effectiveness of the measures and formulate strategies and guideline through the regional consultative meeting/workshop. Regional training programs on the theory and methodology of fisheries resource enhancement and habitat conservation measures will be conducted to build up capacity in ASEAN member countries for promote sustainable fisheries resources enhancement.

2. Background and Justification:

Coastal waters of Southeast Asia are blessed with high productivity of fisheries resources because of rich ecosystems such as dense mangrove forests and seagrass beds sustained by rich effluence of nutrients from land, as well as extensive coral reefs with clean tropical sea environment. These areas are critical to a broad range of aquatic organisms during their life cycle from breeding, spawning, nursing and growing, hosting the feeding zones of aquatic species that are economically important, and serving as important source of recruitment of a wide diversity of fishery resources.

It is widely recognized that healthy marine environment is a prerequisite for sustainable marine fisheries production. Therefore, it is one of the most important responsibilities of fishery managers in the Southeast Asian Region to work for realization of good balance and relationship between human activity and coastal environment so that we can utilize marine fishery resources in a sustainable manner.

However, commercially important fishery resources in the region have declined due to many factors that include overfishing, illegal fishing, use of destructive fishing practices, and environmental degradation. Massive clearance of mangrove forests for aquaculture, urbanization, industrialization, wood fuel, timber and the like, could bring about large temporary economic benefits to certain groups of people or governments but in the end, the breeding, nursery and feeding areas of many aquatic species such as fishes, crustaceans, and mollusks might be destroyed and lost.

Furthermore, the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Change Environment”, held in June 2011, adopted a resolution recommending that “optimize the use of inshore waters through resources 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, as appropriate, and give priority to human resources development for the implementation of such programs”. Then, project on Promotion of sustainable fisheries resources enhancement measures in critical habitats/fishing grounds in Southeast Asia is necessary for SEAFDEC member countries.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities:

3.1 Objectives, Outcome and Output of the Project

Objective	Outcomes	Outputs	Activities
Objective 1: Information gathering on fisheries resources enhancement and habitat conservation measures in Southeast Asia	Outcome 1: Application and verification of various methodologies for quantitative assessment, monitoring and evaluation of the effectiveness of resources enhancement initiatives.	Output 1: Mapping of important critical fishing grounds and habitats and associated fish species.	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 habitats/fishing grounds in the Southeast Asian region Sub-activity 1.2: Information collection on suitable designs of resource enhancement practices including their evaluation and promotion Sub-activity 1.3: Workshop/Expert consultation on suitable measures for sustainable fisheries resource enhancement and habitat conservation
Objective 2: Human resources development for implementation of fisheries resources enhancement and habitat conservation measures	Outcome 2: Strengthen and developed of human capacity in fisheries resources enhancement and habitat conservation	Output 2: Regional training programs on fisheries resource enhancement and habitat conservation measures as well as technical transferring through the technical assistance in a pilot site implementation.	Activity 2: Technical assistance in 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. Sub-activity 2.2: Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fishery ecosystem management. Sub-activity 2.3: Capacity building on theory and methodology of fisheries resource enhancement and habitat conservation measures.
Objective 3: Disseminating and promoting fisheries resources enhancement and habitat	Outcome 3: Rising awareness of resources users on the important of fisheries	Output 3: Publication of the promotion materials on importance of fisheries resources	Activity 3: Promotion and extension on rehabilitation of fisheries resources and habitat/ fishing grounds in ASEAN Region

conservation measures suitable for Southeast Asia;	resources enhancement and habitat conservation	enhancement and habitat conservation	
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3.2 Overall Scope/Description of Project

Activity	Description
<p>Activity 1 Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices</p>	<p>Under this activity will composed of 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.</p> <p>Activity will conceptual on the 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 and designs/models experiment.</p> <p>This activity includes workshops as well as expert consultations to identify appropriate and effective resources enhancement tools and measures for fishery resources enhancement and habitats conservation and other related activities.</p>
<p>Activity 2 Technical assistance in pilot project sites and capacity building on rehabilitation of fisheries resources and habitats/fishing grounds</p>	<p>In this activity, selected onsite study and evaluation on enhancement practices including artificial reefs impact to fisheries resources and environment are conducted in selected pilot project site of member countries. The pilot site selection will be decided following the discussion at the project inception workshop.</p> <p>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 seagrass beds for fisheries resources in member countries. The pilot site selection will be decided following the discussion at the project inception workshop.</p> <p>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 member countries.</p> <p>Capacity building on theory and methodology of fisheries resources and habitats/fishing grounds would be provided through a training course and study trip to transfer of assistance both in terms of technical and management aspects to member countries in order to enhance their capacities and awareness of fishery resources</p>

	rehabilitation and habitats/fishing grounds practices.
Activity 3 Promotion and extension on rehabilitation of fisheries resources and habitat/ fishing grounds in ASEAN Region	<p>Documentation of the best practices of the project implementation will be carry out, which can be used as inputs in the preparation of IEC (information, education and communication) materials for dissemination in the region.</p> <p>The regional seminar is primarily aimed at reviewing the impact of project and disseminating the modality of the project operation and resultant outcomes to other SEAFDEC member countries. The project activities and its outcomes during its 4.5 years' implementation are described in detail by the responsible parties. In addition, the impacts of the respective activity and expected follow-up actions after the termination of the project are also highlighted.</p>

3.3 Activity, Sub-activity and Proposed Budget for 2014-2019 (in case of 5 year project from 2015)

(Unit: USD)

Activity	Sub-Activity	Y1 2014	Y2 2015	Y3 2016	Y4 2017	Y5 2018	Y6 2019
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 habitats/ fishing grounds in the Southeast Asian region		0	0	5,360	30,000	18,360
	Sub-activity 1.2: Information collection on suitable designs of resource enhancement practices including their evaluation and promotion		0	1,500	2,780	5,542	0
	Sub-activity 1.3: Workshop/Expert consultation on suitable measures for sustainable fisheries resource enhancement and habitat conservation			0	0	0	35,000
Activity 2: Technical assistance in 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		9,500	8,000	4,360	10,243	31510

	Sub-activity 2.2: Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fishery ecosystem management		27,700	20,000	27,860	15,000	0
	Sub-activity 2.3 Capacity building on theory and methodology of fisheries resource enhancement and habitat conservation measures		0	0	0	30,000	0
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		1,000	560	1,000	1,094	980
	Sub-Total Budget		38,200	30,060	41,360	126,879	5,850

PART II: ACHIEVEMENT OF 2019 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the present year <2019>:

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 for fisheries resources in member countries. Capacity building on theory and methodology of fisheries resources and habitats/fishing grounds would be provided through a training course of Fish Enhancing Devices (FEDs) and human resources development on the hatchery techniques for enhance crab resource has provide to local fishers and local fisheries officers in Kep province. Study trip to transfer of assistance in terms of technical and management aspects to Cambodia research in order to enhance their capacities and awareness of crab fishery resources rehabilitation in sea grass fishing grounds. Survey reports on the designs, material and construction of FEDs and mapping of important fishing grounds and habitats on FEDs installation in Thailand. Report on the Study on Enhancement of Sustainable Management of the Blue Swimming Crab Fisheries in Kep will be disseminated to Member Countries. Rising awareness of resources users on the important of fisheries resources enhancement and habitat conservation. Publication of the promotion materials on importance of fisheries resources enhancement and habitat conservation.

2. Information of Present Year Activity including Involved Stakeholders:

List of Actual Sub-activity	Type of activity*	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1					
Sub-activity 1.2 Information collections on suitable designs of resource enhancement practices including their evaluation and				108 (70)	20,000

promotion					
Sub-activity 1.3 Workshop/Expert consultation on suitable measures for sustainable fisheries resource enhancement and habitat conservation This activity includes workshops as well as expert consultations to identify appropriate and effective resources enhancement tools and measures for fishery resources enhancement and habitats conservation.		20	4		
Activity 2					
Sub-activity 2.2 Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fishery ecosystem management.					
Activity 3					
Sub-activity 3.1 Information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds for public awareness			2	30	2,250

Remarks) Regarding the number of participants, please indicate total number of participants (and number of female participants within), such as 20 (10).

3. Achievements and Expected Outcome/Outputs of the Activity:

Planned activity	Expected outcome/output	Achievements
Activity 1		
Sub-activity 1.1	Survey reports on the designs, material and construction of FEDs	Information on the designs, material and construction of FEDs and mapping of important fishing grounds and habitats on FEDs installation in Thailand as the reference to SEAFDEC MCs to select appropriate design and implement.
Sub-activity 1.2	Report on the training course	Report on the training course on design, material and construction of FEDs and evaluation on the impact of FED installation for sustainable fisheries resource enhancement and habitat conservation Includes the way forward of national level
Activity 2		
Sub-activity 2.2 Technical assistance in pilot sites for diagnoses of fishing grounds and evaluation of fishery ecosystem management.		Experience and lesson learnt on the co-management on fisheries resources enhancement through development and implement of crab bank, conservation zone in Kep Province of Cambodia Hatching facilities (Selection of sites, design and construction of the hatching facilities) and introduction of hatching technology Collaborative stakeholder agree to set up hatchery system to hatch and releasing juvenile blue

		swimming crab at off-coast of Angkaul village. Conservation zone in Kep Province of Cambodia
Activity 3		
Sub-activity 3.1		Article in the proceeding of the International Conference on Fisheries Engineering 2019 (ICFE 2019)

4. List of Completed Publications and Others (e.g. technical report, VDO, presentation file, etc.):

List of completed publications for the year 2019	Type of media	Attached e-file
1. (Draft) Report on the Environmental and Socioeconomic Impact of the FEDs (Fish Enhancing Devices) in Coastal Area. (Under developing due to the project will finish in December 2019)	Hard Copy	
2. Presentation on the environmental impact of the FEDs (Fish Enhancing Devices) in Coastal Area.	Power Point Presentation	
3. Report on the training course on design, material and construction of FEDs and evaluation on the impact of FED installation for sustainable fisheries resource enhancement and habitat conservation Includes the way forward of national level.		
4. Report on the Conservation zone in Kep Province of Cambodia.	Hard Copy	
5. Signboard to promote the Crab bank facilities and conservation zone off-coast of Angkaul village, Kep Province of Cambodia.	Board	
6. Article in the proceeding of the International Conference on Fisheries Engineering 2019 (ICFE 2019, 21 to 24 September 2019)	Hard Copy and Power Point Presentation	

5. Evaluation from Participants of Member Countries for WS and Training Course (if available):

Planned activity	Evaluation/ Views from Participants
Activity 1	
Sub-activity 1.1	Local community request to SEAFDEC conduct the research on alternative material of FEDs Information from the study include the impact of environment and socioeconomic of the deployment of rope FEDs and its guideline to study impact of rope FEDs to the ecosystem
Sub-activity 1.2	Waiting for the result of the training activities than planning to conduct in November 2019
Activity 2	
Sub-activity 2.2	The project will terminate in year 2019. In General, FiA Cambodia is promoting ecosystem approach to fisheries management. To solve with the issue on the crab fisheries resources in Kep province, SEAFDEC support the FiA Cambodia to improve collaboration between local government and fishers in Angkaul village, Kep Province of Cambodia. Local stakeholder agreed and cooperate with government and SEAFDEC to enhance crab resources by using crab bank method and the demarcation of conservation zone.

Activity 3	
Sub-activity 3.1	SEAFDEC researcher will participate in national and international conference in year 2020 in order to present result of project

6. Major impacts/issues:

The project is going to terminate in 2019. All activities in 2019 is to summarize the result of working in year 2014-2018. In addition, way forward and direction of the project implement in 2020 is needed to finalize and prepare for implement during the new JTF Manager.

Fisheries resources enhancement need to improve in SEAFDEC Member Countries in different tools and practices. The project has already preliminary identified need of each SEAFDEC Member Countries. Summarizing issues of implementation of resource enhancement in SEA region is the requirement on scientific data to determine effectiveness resource enhancement, Stakeholder involvement in enforcement and compliance initiatives leading to greater compliance, Effective enforcement and greater overall cost of surveillance and management require advanced technological capabilities which are costly. There is the major hindrance of technical constraint that need to support by SEAFDEC, or the sharing experience among SEAFDEC Member Countries facilitate by SEAFDEC. The impact on the installation of Artificial reef and Fish Enhancing Devices needs to investigate and extend the knowledge to MCs. Impact of the fisheries resources degradation always relevant with economic issue poverty issues. With that the resource enhancement always need socioeconomic study and improvement of appropriate fisheries management approach. The project needs multidisciplinary research to improve that program.

PART III: ACHIEVEMENTS IN OVERALL PROJECT DURATION

1. Abstract of Achievements in the Overall Project Duration:

Achievements of the project were aimed to support the Policy Recommendations and Strategic Plans of Action for the Implementation of Fisheries Resources Enhancement Activities in the Southeast Asia Region has adopted by ASEAN Member States in 2015. SEAFDEC is collaborative. Lesson learn and experience of the field officer the main achievement is success of the establishment of hatchery facility of crab bank and conservation zone in Kep province and dog conch shell resource management measures in Krabi Province, Thailand. Ecosystem approach to fisheries management by using co-management and participatory approach between local fishers, local fisheries administration and central fisheries administration is key lesson learn to enhance skill and experience of coastal stakeholder to co-managing fisheries resources. One of the recommendations of Policy Recommendations and Strategic Plans of Action is the support on the implementation, monitoring and evaluation of artificial habitat installation need to implement and disseminate the result including with reference to the SEAFDEC Member Countries. Project will come up with the guideline to investigate environment and socioeconomic impact of the artificial habitat installation.

2. Implemented Activities/sub-activities in the Overall Project Duration:

List of Activities	Description of Implemented Activities
Activity 1 Development on diagnoses of critical fishing grounds and evaluation by resources enhancement practices	The activities will composed of 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 the research

	survey. The results of the information gathering will be used for identifying the environmental and socioeconomic impact of the installation of artificial habitat
Activity 2: Technical assistance in pilot project sites and capacity building on rehabilitation of fisheries resources and habitats/fishing grounds	Activity will conceptual on the 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 on crab resources in Cambodia and stakeholder consultations on the management to elaborate responsibility of stakeholders and fishers in the management plan.
Activity 3	Documentation of the best practices of the project implementation will be carry out, which can be used as inputs in the preparation of IEC (information, education and communication) materials for dissemination in the region. Researcher of SEAFDEC will participate in the international seminar/conference is primarily aimed at reviewing the impact of project and disseminating the modality of the project operation and resultant outcomes. The project activities and its outcomes during its implementation is described in detail by the responsible parties. In addition, the impacts of the respective activity and expected follow-up actions after the termination of the project are also highlighted.

3. Achievements and Outcomes/Outputs of Activities in the Overall Project Duration:

List of Activities	Achievements and Outcomes/Outputs of Activities
Activity 1	Survey reports on the designs, material, construction and recommendation on the good practices and management of FEDs installation in Thailand. Report of the study of environment and socioeconomic of the deployment of rope FEDs and its guideline to study impact of FEDs to the coastal ecosystem.
Activity 2	Experience and lesson learnt on the co-management on fisheries resources enhancement though development and implement of crab bank, conservation zone in Kep Province of Cambodia. The hatching facilities (Selection of sites, design and construction of the hatching facilities) and introduction of hatching technology has been agreed by the participatory approach by using stakeholder consultation to set up hatchery system to hatch and releasing juvenile blue swimming crab at offcoast of Angkaul village. Conservation zone in Kep Province of Cambodia is develop in the similar process of crab bank.
Activity 3	Publication as result of research studies, i.e. environmental and socioeconomic impact of the installation of artificial habitat, project implementation on establishment of crab bank and conservation as tools for co-managing of the rehabilitation of crab resources, material and design of FED in Thailand, and artificial habitat definition will disseminate through the publication website and presentation to conference or seminar. SEAFDEC researcher will participate in national and international conference in year 2020 to present results of project to MCs and the global.

4. Evaluation and Major Impacts/Issues in the Overall Project Duration:

Regarding the restructure of Training Department of SEAFDEC effective in April 2017, Research and Development Division, the delay on implementation of JTF Project on “Promotion of sustainable fisheries resources enhancement measures in critical habitats/fishing grounds in Southeast Asia” and the work plan in the year 2017 has been revised into two main resources enhancement tools, i.e. Fish

Enhancing Devices and Crab bank (crab resource enhancement) Regarding to the Policy Recommendations And Strategic Plans Of Action For The Implementation Of Fisheries Resources Enhancement Activities In The Southeast Asian Region (Adopted on 30 July 2015 and Endorsed by the 25thASWGFⁱ), fisheries resources enhancement should implement through participatory approach and co-managing between the local fishers and government sectors. That makes project need longer time with financial support by both project and national government. Period of the implementation should may require more than 5 years period. Guideline to conduct research study on the impact of artificial habitat needs implement in countries.

5. Publications and Others (e.g. technical report, VDO, presentation file, etc.):

- Presentation and document on the Policy Recommendations and Strategic Plans of Action for the Implementation of Fisheries Resources Enhancement Activities in the Southeast Asian Region (Adopted on 30 July 2015 and Endorsed by the 25th ASWGFⁱ) presented in the 25th ASWGFⁱ)
- Report on the Methodologies to Introduce and Manage the Effective Fish Enhancing Devices (FEDs)
- Study on the Need Assessment in Fisheries Resource Enhancement project presented in the Regional Technical Meeting on Fisheries Resource Enhancement in Southeast Asia Bangkok, Thailand, 24-26 April 2018 (Presentation file)
- Term and Definition of Artificial Habitats Artificial Reefs (ARs), Fish Aggregating Devices (FADs) Fish Enhancing Devices (FEDs) presented in the Regional Technical Meeting on Fisheries Resource Enhancement in Southeast Asia Bangkok, Thailand, 24-26 April 2018 (Presentation file)
- (Ongoing) Report on the Enhancement of Sustainable Management of the Blue Swimming Crab Fisheries in Kep Province, Cambodia
- (Ongoing) Report of the study of environment and socioeconomic of the deployment of rope FEDs and its guideline to study impact of FEDs to the coastal ecosystem.