



Southeast Asian Fisheries
Development Center



Global Environment
Facility

**Establishment and Operation of A Regional System of Fisheries *Refugia*
in the South China Sea and Gulf of Thailand**

**REPORT
THE SEVENTH MEETING OF
THE REGIONAL SCIENTIFIC AND TECHNICAL COMMITTEE**

GRAND MERCURE HARMONI-JAKARTA, INDONESIA
8-10 NOVEMBER 2022



**SEAFDEC/UNEP/GEF
Fisheries *Refugia***

DECEMBER 2022

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Southeast Asian Fisheries
Development Center



United Nations
Environment Programme



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SEAFDEC/UNEP/GEF Project on Establishment and Operation of a Regional System of
Fisheries *Refugia* in the South China Sea and the Gulf of Thailand

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I. OPENING THE MEETING

- 1) The Seventh Meeting of the Regional Scientific and Technical Committee (RSTC7) was organized by the Project Coordination Unit in collaboration with The Agency for Marine and Fisheries Research and Human Resources, Ministry of Marine Affairs and Fisheries (MMAF), the Republic of Indonesia from 8-10 November 2022 at Grand Mercure Harmoni-Jakarta, Indonesia. The National Scientific and Technical Focal Point from six national lead agencies invited regional experts and stakeholders, and SEAFDEC representatives attended the meeting. The list of participants is in [Annex 1](#).

1.1 WELCOME SPEECH FROM SEAFDEC/TD

- 2) Mr. Taweekiet Amornpiyakrit, Senior Project Planning and Management Officer and concurrently Special Departmental Coordinator, on behalf of SEAFDEC Secretary-General Madam Malinee Smithrithee, welcomed all participants to the RSTC7. SEAFDEC congratulates the success of the identification of a total fisheries refugia area, which could reach about 1.1 million hectares which is four times greater than the GEF proposal. In addition, SEAFDEC sincerely thanks the host organizer led by Mr. Ari Prabowo, the SEAFDEC National Coordinator for Indonesia, concurrently the Head of Bureau for Public Relations and Foreign Cooperation, Secretariat General, MMAF of Indonesia and his team for the excellent arrangements and support of the meeting. His statement is as [Annex 2](#).

1.2 WELCOME SPEECH FROM RSTC6 CHAIRPERSON

- 3) Mr. Jamil bin Musel, chairman of the Sixth Meeting of the Regional Scientific and Technical Committee, welcomed all participants to the RSTC7. He expressed his sincere thanks to the MMAF for hosting this last meeting for scientific and technical discussion, and he also looked forward to fruitful discussions from the meeting.

1.3 OPENING REMARKS BY ALTERNATE COUNCIL DIRECTOR FOR INDONESIA

- 4) As a hosted country, Mr. I Nyoman Radiarta, Head of the Agency for Marine and Fisheries Research and Human Resources, Ministry of Marine Affairs and Fisheries, welcomed all participants to Jakarta, Indonesia. He referred to the vital role of the RSTC and looked forward to all participants contributing to providing strategic input and sharing constructive information and lessons learned among participating countries. In the end, he expressed his highest appreciation for the tireless efforts made by the parties, including the organizing committee from the Ministry of Marine Affairs and Fisheries, SEAFDEC and UNEP, and all the delegates. His statement is as [Annex 3](#).

II. HANDOVER CEREMONY

- 5) Handover ceremony was a special session to allow the Agency for Marine and Fisheries Research and Human Resources, as a project national lead agency, to handover all project accomplishments of two fisheries refugia identification and proposed management and implementation from the baseline survey and scientific studies to other two relevant agencies: Directorate General of Capture Fisheries and Directorate General of Marine and Spatial Planning for further implement the project.
- 6) Taking the opportunity, SEAFDEC, as an executing agency of the project, gave a token of appreciation to all relevant agencies of the MMAF for implementing the national fisheries refugia project.

III. ORGANIZATION OF THE MEETING

3.1 DESIGNATION OF OFFICERS

- 7) Mr. Somboon Siriraksophon, Project Director, as a secretariat of the RSTC7, introduced the meeting to the elected chairpersons and vice-chairpersons in the past RSTC meetings. He also informed the meeting that the election of a new RSTC chair and vice chairperson would only be among the RSTC members. The RSTC members were, therefore, invited to nominate a new Chairperson for the RSTC7 meeting. After deliberation, Ms. Astri Suryandari, National Scientific and Technical Focal Point for Indonesia.
- 8) Ms. Astri Suryandari, National Scientific and Technical Focal Point for Indonesia, expressed her sincere thanks to all RSTC members for electing her as chairperson of the RSTC7 Meeting.
- 9) Ms. Astri Suryandari informed the meeting about the organization of the meeting and logistic arrangement and other general information for the smooth operation of the RSTC7 meeting.

3.2 DOCUMENTATIONS LIST

- 10) Mr. Somboon Siriraksophon introduced a list of the meeting documents as shown in [Annex 4](#).

IV. ADOPTION OF THE AGENDA

- 11) Mr. Somboon Siriraksophon introduced the meeting agenda in detail, referring to the target objectives and outputs of the RSTC6. After consideration, the committee adopted the agenda as [Annex 5](#) of this report.

V. FINANCIAL MATTERS

- 12) Mr. Somboon Siriraksophon presented the current budget allocation to all national and regional programs and the overall cumulative expenditures reported to UNEP as of 30 September 2020. The cumulative expenditures were USD 2,166,956.62, and the balanced funds was USD 833,043.38 for the Q4/2022 including the administrative and finance cost until June 2023. Regarding this, he informed six country partners to take into consideration the actual expenditures of 2021, based on the financial audit reports submitted to the SEAFDEC for consolidation. However, the proposed adjustment of actual expenditures will be addressed to the forthcoming PSC8 meeting in December 2022 for endorsement.
- 13) In addition, he summarized the co-financing as of 30 September 2022 both in-kind and cash contributed by all country and SEAFDEC partners against the commitments endorsed by GEF. The results from partners contribution indicated the total actual co-financing from six countries is USD 9,634,000 higher than the proposed proposal about 3.5 million USD. In addition, SEAFDEC also contributed the co-financing of USD 11,284,000 higher than the proposed proposal about 4.95 million USD. Working paper is as [Annex 6](#).

VI. WORK PROGRESS INCLUDING ISSUES AND CHALLENGES TOWARDS ACHIEVING THE TARGET OUTPUTS/OUTCOMES

4.1 CAMBODIA

- 14) Mr. Leng Sy Vann, National Scientific and Technical Focal Point for Cambodia, summarized the progress report of Cambodia as of 30 September 2022 as follows:
 - a. Three fisheries refugia profiles were completed and the boundary of fisheries refugia in Kep, Koh Kong, and Preah Sihanouk were approved by relevant stakeholders at provincial and national levels. However, the boundary of fisheries refugia in Kampot has been progressed and be finalized with provincial governor by the end of this year.
 - b. There are four management plans for fisheries refugia in Kep, Koh Kong, Kampot, and Preah Sihanouk provinces being proposed.

- c. Only one management plan for fisheries refugia in Kep province was completed, but the management plan for fisheries refugia in Koh Kong has been finalized with national consultant, Kampot province does not start to process it yet, and the management plan for fisheries refugia in Preah Sihanouk province is in process
 - d. There were 14 stakeholder meetings supporting the development of management plan for fisheries refugia in Kep and Koh Kong provinces.
 - e. Two operational management committee of Fisheries Refugia: Provincial Management Committee, and Technical Working Group (TWG), were established in Kep province, but only a TWG established in Koh Kong province.
 - f. Project is closely working with civil society organizations and local non-governmental organizations such as MCC, WEA, FFI, IUCN, FACT, and CFis to ensure effective fisheries refugia and habitat management.
 - g. Fisheries refugia in Kep, Koh Kong, and Preah Sihanouk provinces were accepted by stakeholders and endorsed by the Royal Government of Cambodia, but fisheries refugia in Kampot province is not adopted yet (it is expected to adopt in December of this year.
 - h. FiA included Fisheries Refugia Concept into the amended fisheries law in which it is expected to be adopted within this year.
 - i. National guideline on fisheries refugia has been finalized with the National Consultant.
 - j. National action plan for fisheries refugia has been finalized with nation consultant and being expected to complete in December 2022.
 - k. The analysis of fish larvae data was shared with other countries through regional fisheries refugia website.
 - l. FiA closely worked with FiACs, CSOs, and Community Fisheries to build and deploy concrete boxes into fisheries refugia sites to prevent trawlers and other illegal fishing gears and to protect fish larvae stage, and maire habitat. This best practices locally generated to address the effects of trawl and push net fishing on habitat and refugia sites.
 - m. The information of fisheries refugia in Cambodia were published online through the regional website link: <https://fisheries-refugia.org/cambodia-activities-report/91-refugia-country-activities>
 - n. Five reports related to awareness materials and outreach programs were published online.
 - o. Meeting reports of NFRC, NSTC, and Site Base Management Board were regularly published online.
- 15) The key challenges faced by national lead agency are as follows:
- a. FiA lacks resource person to enhance access to information and data related to the status and trends in fish stock, but FiA has closely collaborated with FFI, MCC, and WEA to conduct assessment of Marine Habitat in the whole coastal area. The result will be documented by December 2022.
- 16) The working paper is as **Annex 7** of the report.

4.2 INDONISEA

17) Ms. Astri Suryandari, National Scientific and Technical Focal Point for Indonesia presented the country progress which are summarized as follows:

- a. Fisheries refugia profile for both sites in Indonesia (see documents No. 37 and 48) already reviewed and finalized. This profile document including comprehensive information such as characteristic of the refugia sites delineated area of the refugia and recommended management measures for both sites.
- b. The Fisheries Refugia team under the Agency of Marine and Fisheries Research and Human Resources has been produces several policy papers which contained required information to develop management plan based on fisheries refugia concept. The papers are:
 1. Academic draft for establishing fisheries refugia management plan in West Kalimantan (see No. 51);
 2. Academic draft for establishing fisheries refugia management of Bangka Belitung Province (see No. 52);
 3. Policy brief of establishing fisheries refugia in West Kalimantan Province (see No. 49);
 4. Policy brief of establishing fisheries refugia in Bangka Belitung Province. (see No. 50);
- c. In order to enhance community and policy maker' acceptance on fisheries management-based fisheries refugia concept, therefore, several meetings that engaged stakeholders have been conducted during the project implementation. The meeting were held to facilitate both scientific network (see 1, 2, 3, 8, 9, 10, 11, 12) and management authority communications (see 13, 14, 17, 19, 23, 24, 38, 42, 43, 57, 65)
- d. Participation of the targeted community members during the process for establishing fisheries refugia based recommendation has been facilitated through socialization meeting (see No. 14, 65, 66). The community engagement during the initiation of establishing fisheries refugia system in Indonesia is essential to enhance community acceptances.
- e. The small grants program project not implemented, however, an effort to strengthen civil society and community organization participation in the management of fisheries refugia has been initiated through community involvement in survey for establishing FR in both sites and meeting (see report No 56). The civil society and community organizations were also involved as respondent in socio-economic studies in both sites (see No. 36 and 40) as well as in capacity building and seminar activities (see No. 14, 64, 69).
- f. Fisheries refugia had been endorsed to the fisheries authorities (see reports No. 61, 62, 63). The documents delivered to endorse the fisheries refugia-based policy (see 37, 48, 49, 50, 51, 52, 53) will be used to open fisheries policy formulation in the management level.
- g. An effort to revise the existed fisheries management policy was not possible to be conducted during the project time frame. Nevertheless, a document required to revise a policy and supplement a policy by involving the fisheries refugia concept has been prepared (see No. [37](#), [48](#), [49](#), [50](#), [51](#), [52](#), [53](#)). This fisheries refugia review documents provided several information regarding the regulation of fisheries management and marine spatial management. To strengthened this input, additional

document were also prepared to facilitated the review on national and provincial in Fisheries Refugia marine spatial management (see [53](#))

- h. The national guideline has been prepared by involving authorized agency and expert reviewers (71).
- i. The recommendation documents to endorse policy and executive orders had been delivered through handover meeting (see reports No. 61, 62, and 63). The academic draft delivered to the national authorities (No. 51 and 52) included the essential information to be used as the National Action Plan.
- j. The information about fish stock and critical habitat were acquired during the survey (see 37 and 48) and several comprehensive studies (see 25, 26, 27, 28, 29, 33, 34, 39, 40) have been conducted within two years (2020-2021) regarding population structure, biological aspect and habitat condition of the species target, as well as postharvest industry, oceanography, and socioeconomic condition to provide the condition of the species target and its critical habitat.
- k. All those reports were available to be accessed online via <https://fisheries-refugia-indonesia.org/index.php/laporan-kegiatan>
- l. The information about fish stock and critical habitat were acquired during the survey (see 37 and 48) and several comprehensive studies (see 25, 26, 27, 28, 29, 33, 34, 39, 40) have been conducted within two years (2020-2021) regarding population structure, biological aspect and habitat condition of the species target, as well as postharvest industry, oceanography, and socioeconomic condition to provide the condition of the species target and its critical habitat.
- m. All those reports were available to be accessed online via <https://fisheries-refugia-indonesia.org/index.php/laporan-kegiatan>
- n. National Geographical Information system has been developed and accessible online via <https://fisheries-refugia-indonesia.org/index.php/data> (see report No 55).
- o. Characterisations for refugia sites has been upload in FR website accessible via <https://fisheries-refugia-indonesia.org/index.php/karakteristik-lokasi> (see report No. 54).
- p. Communications on progress and lesson learned on the level of Project committee (see 1, 3, 4, 6, 12, 16, 20, 21, 32, 44, 45), scientific boards (see 2, 7, 8, 9, 10, 11, 15, 18, 30, 31, 35, 46) and management/stakeholders board (see 13, 17, 19, 23, 24, 28, 38, 42, 43, 57, 65, 66) regularly conducted. All progress are documented on web portals accessible via <https://fisheries-refugia-indonesia.org>
- q. Information regarding best practices had been uploaded and accessible via <https://fisheries-refugia-indonesia.org>. The most recent activities accessible via home menu, while other information provided on data, characteristic, GIS, and report menu.
- r. To deliver information as the best practices, several communication were conducted through seminar (14), capacity building (64, 69), technical meeting (65), and socialization (66).
- s. More than 4 awareness materials to improve community acceptance have been produced and accessible via <https://fisheries-refugia-indonesia.org/index.php/awareness> (see report 68). These awareness materials were delivered to the community through outreach programs facilitated in stakeholders meeting (see 13, 17, 19, 23, 24, 28, 38, 42, 43, 57, 65, 66), capacity

building (14, 64, 69), and via youtube channel <https://www.youtube.com/@fisheriesrefugiaindonesia8152>. In addition, outreach program conducted by mass media facilitation was also important to spread the ideas regarding fisheries refugia in national or local community (70).

- t. Indonesia has developed national web portal on Fisheries Refugia accessible via <https://fisheries-refugia-indonesia.org> (see 22 and 41)
- u. The fisheries refugia team has drafted GEF IW experience notes on application of fisheries refugia provided in documents 67.
- v. NFRC, NSTC and Management board meeting conducted regularly following the term of reference (see 58, 59, 60).

18) The working paper is as **Annex 8** of the report.

4.3 MALAYSIA

19) Mr. Sallehudin bin Jamon, National Scientific and Technical Focal Point for Malaysia presented the country progress which are summarized as follows:

- a. A total of 225,200 ha of fisheries refugia have been established in Malaysia namely Refugia for Mud spiny Lobster covering 140,023 ha and Refugia for Tiger Prawn in Kuala Baram covering the area at 85,200 ha
- b. 2 Management Plan has been developed and yet finalize with the top management. Concurrently a few series of consultations have been conducted on both sites. Best Practice Training also has been conducted to familiarize the fisherfolks with the new initiative.
- c. Few series of engagement and field study has been conducted with the local authority, NGOs and stakeholders. From the session conducted most of the participant agreed and support the establishment of refugia
- d. Fisheries Refugia Working Groups has been established with promising local involvement from time to time. This initiative has Strong support Fisheries Association and Fisheries Development Authority Board.
- e. DOF has finalized the policy to control and legislate the refugia sites and yet to be endorsed by Dec 2022.
- f. Management Plan for both sites will be endorsed in Nov 2022 and will be implemented starting from Jan 2023.
- g. At sites, DOF has start implementing the close season on voluntary basis since 2021.
- h. Data collection to support establishment and management of the refugia sites has been completed in year 2021.
- i. Fisheries Annual Statistics are also referred to strengthen our management plan for Refugia Sites, regarding this the National Depository Data System has been established (eSMPP and eLESEN)
- j. DOF engaged their own Research Division in terms of collecting field data and Active collaboration with universities and relevant agencies in finalizing the refugia boundaries as well as management Plan
- k. Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation, 2 catalogues have been published, and 4 sessions of best practice training has been conducted

20) The working paper is as [Annex 9](#) of the report.

4.4 PHILIPPINES

21) Mr. Val M. Borja, National Scientific and Technical Focal Point for Philippines presented the country progress which are summarized as follows:

- a. Finalized National Guidelines for the Establishment and Operation of Fisheries Refugia in the Philippines
- b. Monitored and analyzed for reproductive biological samplings of target species, and finalizing the boundary delineation in three pilot sites: Bolinao, Pangasinan; Masinloc, Zambales; and Coron, Palawan.
- c. Published 57 technical and meeting reports online via Regional Refugia Website)
- d. Established the refugia site management committee at 3 refugia sites.
- e. Drafted Management Plan for 3 sites (for approval and comments of the 3 management committees)
- f. 2 refugia information centers were established in Bolinao and Masinloc Sites
- g. Agreed on TORs of NFRC, NSTC, and Site-based Management Board

22) The working paper is as [Annex 10](#) of the report.

4.5 THAILAND

23) Ms. Jinda Petchkamnerd, on behalf of the National Scientific and Technical Focal Point for Thailand, presented the country progress which are summarized as follows:

- a. The 2 fisheries refugia profile reports, including maps and site characterizations for Trat and Surat Thani Sites were published (Ref: Report No 25, 31).
- b. Management plans were prepared and included in the reports of the Workshop on Fisheries Refugia Operational Management at Trat and Surat Thani Sites (Ref: Report No 44, 47). DOF/TH also conducted fisheries refugia boundary marking at Surat Thani Site (Ref: Report No 45).
- c. 13 Network/stakeholder meetings and activities [including list of participants and results of work] to support development of management plan were regularly organized (Ref: Report No 1, 2, 3, 4, 5, 6, 13, 14, 26, 35, 44, 45, 47).
- d. There are 2 operational management plans including list of operational management committee at Surat Thani and Trat refugia sites (Ref: Report No 44, 47).
- e. The project has fully engaged civil society and community organization through the activities of site-based committee meetings and stakeholder consultations (Ref: Report No 5, 6, 13, 14, 18, 19, 23, 26, 34, 35, 41, 44, 45, 46, 47). There are 2 papers of socioeconomic aspects in Trat and Surat Thani refugia sites published under the collaboration (Ref: Report No 29, 30). Besides, the project conducted “a training-workshop on socioeconomic study and value chain analysis of fisheries” for personnel involved in the task of socioeconomic of fishers in Thailand (Ref: Report No 24).
- f. Endorsed the revised policies for fisheries in Thailand which include the Fisheries Refugia Concept were the endorsed “Marine Fisheries Management Plan of Thailand 2020-2022” (Ref: Report No 28, 39).
- g. National guidelines on establishing and operating fisheries refugia was finalized and be published by November 2022.

- h. There are 2 endorsements of national fisheries refugia policies/executive orders: Notifications of Ministry of Agriculture and Cooperatives for Fisheries Refugia in Trat Province; and Notification of Surat Thani Provincial Fisheries Committee for Fisheries Refugia in Surat Thani Province (Ref: Report No 44, 47).
- i. National Action Plans for the management of priority fisheries refugia and associated biodiversity are to be endorsed at upcoming Site-based Fisheries Refugia Management Board Meetings at Trat and Surat Thani Provinces in November 2022.
- j. Data set of national fisheries management, fishery biology of significant species in the Gulf of Thailand, fish stocks and habitats, and fisheries statistics of Thailand are published online at the Thailand national web portal URL: <https://inter.fisheries.go.th/fishrefugia>
- k. Database of fisheries refugia in Thailand populated with datasets is created online at <https://inter.fisheries.go.th/fishrefugia>
- l. Status of location and management areas of fisheries refugia in Trat and Surat Thani Provinces are presented online in GIS format at the Thailand national web portal URL: <https://inter.fisheries.go.th/fishrefugia>. Site-based information are also provided online (Ref: Report No 25, 27, 29, 30, 31).
- m. Characterizations for 2 refugia sites in Thailand can be accessible online at Thailand national web portal URL: <https://inter.fisheries.go.th/fishrefugia>
- n. 1 Dataset of fisheries management for the areas and periods of egg-bearing, spawning, and larval rearing of aquatic animals in some parts of the fishing grounds in the Gulf of Thailand are provided online at <https://inter.fisheries.go.th/fishrefugia>
- o. 4 communications on best practices are included in stakeholder consultation workshops and local community consultation meetings at Trat and Surat Thani Sites (Ref: Report No 5, 6, 26, 35).
- p. 4 awareness materials for fisheries refugia were published online in Thailand national web portal on fisheries refugia URL: <https://inter.fisheries.go.th/fishrefugia>
- q. 4 outreach programs are as follows:
 1. Report of the training-workshop on socio-economic study and value chain analysis of fisheries (Ref: Report No 24)
 2. Report of the training-workshop on the introduction of Ecopath with Ecosim Program for the assessment and management of fisheries resources (Ref: Report No 40)
 3. Report of the training-workshop on diving for coastal resources survey (Ref: Report No 43)
 4. Report of the workshop on fisheries refugia boundary marking at Surat Thani Site (Ref: Report No 45)
- r. 1 online Thailand national web portal on fisheries refugia were created as the URL: <https://inter.fisheries.go.th/fishrefugia>
- s. Meeting reports of National Fisheries Refugia Committee, National Scientific and Technical Committee, and Site-based Management Board in each fisheries-refugia site were regularly submitted (Ref: Report No 7, 9, 11, 12, 17, 18, 19, 20, 21, 22, 23, 32, 33, 34, 36, 37, 38, 41, 42, 46).

24) The working paper is as **Annex 11** of the report.

4.6 VIETNAM

- 25) Ms. Pham Thi Thuy Linh, National Scientific and Technical Focal Point for Viet Nam informed the meeting that Viet Nam is trying their best to have an umbrella framework of fisheries refugia under the national law. In Viet Nam, the fisheries protection areas, or fisheries refugia are planned at the national level. The key frameworks are to decentralize to the local government and community levels. In the national master plan, 73 marine fisheries protection zones or refugia are planned for 2021-2030, with a total area of about 1,416,547 hectares, equivalent to about 1.5% of the natural size of Vietnam's sea area. Therefore, when the master plan is ready, it will be decentralized to the community through the co-management approach, including refugia approaches. The systems will engage multisectoral stakeholders in implementation.
- 26) She also informed the meeting that D-fish proposed two of the 73 marine fisheries protection areas as the project refugia sites: at the Coastal area of Lagi – Binh Thuan, for the Subcrenata ark clam, 73,900 ha, and at the Eastern coastal area of Phu Quoc – Kien Giang for Blue swimming crab, 32,860 ha. The two fisheries refugia areas are identified and recommended per the scientific data and information analysis. However, due to circumstance occurred, the revised budget has yet been approved which caused the delayed implementation.

VII. PROGRESS AND STATUS ON ESTABLISHING 15 FISHERIES REFUGIA

- 27) Mr. Somboon Siriraksophon updated the progress of establishing 15 fisheries refugia in the South China Sea and the Gulf of Thailand implemented by six country partners. As of 30 September 2022, the stakeholders accepted the effective management of critical threats to 15 fisheries refugia sites of about 1,159,241 ha. It is about 4.3 folds higher than the proposed refugia areas (269,500 ha) adopted by the GEF/CEO. Among these, five fisheries refugia were agreed upon among stakeholders and approved by the governments, including three in Cambodia at Kep Province for blue swimming crab, Preah Sihanouk for blood cockle, Koh Kong Province for Indo-pacific mackerel, and two in Thailand at Surat Thani for blue swimming crab, and at Trat Province for Indo-pacific mackerel. In addition, the stakeholders recognized eight fisheries refugia sites and will be adopted by the responsible agencies in 2022. The working paper is enclosed as [Annex 12](#).
- 28) After deliberation, the PCU proposed inserting each refugia's management measures into the 15 fisheries refugia information table. The RSTC members agreed on the proposed inclusion, which will further submit to the PSC8 for consideration.

VIII. STATUS OF THE REGIONAL TRAINING PROGRAMS ON FISH LARVAE

- 29) Mr. Somboon Siriraksophon updated the status of organizing the Regional Training Course on Larval Fish Identification and early life history science, scheduled on 16-27 November 2022 at SEAFDEC Training Department, Samut Prakan, Thailand. The training focuses on six fish groups related to the fisheries refugia target species: Scombridae, Carangidae, Engraulidae, Lutjanidae, Siganidae, and Serranidae. In addition, the course includes sharing experience on a country plan/strategy for fisheries resources survey and fish stock identification, including scientific-based management to protect the critical stages of the fish life cycle. To facilitate smooth training, the PCU requested each country to bring target fish larvae collected in their national waters as samples for practicing in the course.
- 30) The detailed training programs and number of participants from each ASEAN Member State are enclosed as [Annex 13](#).

IX. THE GEF IW EXPERIENCE NOTES

- 31) Mr. Somboon Siriraksophon introduced a national project output called "Experience Note," a case study of a given project experience or innovation. Experiences include successful

practices, approaches, strategies, lessons, and methodologies, that emerge in the context of transboundary water management. It consists of a brief project description, the issue faced, how it was addressed (including challenges faced), the results of the intervention, how other projects can replicate the intervention, and finally, what is significant about it.

- 32) The final draft of the Experience Note from five country partners, namely Cambodia, Indonesia, Malaysia, Thailand, and Viet Nam is enclosed as [Annex 14 a-f](#). The Philippines is requested to submit the Experience Note to PCU within 2022.

X. GOOD PRACTICES ON INTEGRATED MANAGEMENT OF FISHERIES AND HABITATS

- 33) Mr. Somboon Siriraksophon informed the meeting on the project output's requirement, particularly under activity 3.1, "Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation the national and regional good practices." He also referred to the SCS SAP Implementation project requested for sharing good practices from the results of the fisheries refugia project.
- 34) The meeting considered the experience notes from six participating countries that could be used as good practices for integrated management of fisheries and habitats. Therefore, all PSC members agreed to include their experience notes in the list of good practices. In addition, the PCU drafted the regional good practices catalog as one of the target outputs, as shown in [Annex 15](#).

XI. FINAL COUNTRY REPORT

- 35) Mr. Somboon Siriraksophon introduced a template of the final country report, which all participating countries agreed to submit to SEAFDEC/PCU by the end of 31 January 2023. The meeting also noted that Viet Nam is an exception due to circumstance issues on delayed implementation.
- 36) The final country report consists of three sessions: 1) Background, 2) Project Status, and 3) List of documents as enclosed in [Annex 16](#).

XII. OPERATION OF THE PROJECT WEBSITE AND REGIONAL GIS AND META DATABASES

- 37) Mr. Somboon Siriraksophon presented the requirement for regional websites to the meeting, including the objectives and required features to develop. The goals of the regional websites are:
- ⇒ Ensure that all regional and national level outputs of project implementation continue to be accessible online, and be easily searched and downloaded;
 - ⇒ Maintain & continuously update the database, information page;
 - ⇒ Maintain and expand the online network of institutional websites relevant to project implementation;
 - ⇒ Use online technologies to build capacity on a results-based approach to project implementation
 - ⇒ Provide timely information to project partners about upcoming project events and meetings;
 - ⇒ Create and regularly update repositories of outputs from project implementation activities;
 - ⇒ Extend and ensure syndication of regional, national, and site level news to project partners;
 - ⇒ Increase the online sharing of information between/among project network members;
 - ⇒ Enhance the online visibility of project activities and outputs (inc. links to IW:LEARN).

- 38) The developed regional Website should include the following features: 1) information/data, 2) project news, online communication via Facebook, and 4) Outreach such as search engine friendly and Google earth layer.
- 39) Mr. Somboon Siriraksophon also informed the RSTC members on how **Maintenance of the Refugia WEBSITE** "fisheries-refugia.org", after the project closure in June 2023.
- 40) The Hosting Company currently hosts the website: "CROSS-WAYS Management Training Limited Partnership" from 2016 until the present. However, this company also hosts other websites: "unepscs.org" and "scssap.org." Regarding this, through the collaboration with the SCS SAP Implementation Project, the SCS SAP project under the supervise from UNEP Project Task Manager plans to transfer all three websites from the Hosting Company to GEF International Waters projects1 (IW_Learn) to ensure long-term sustainability. The cost of hiring a consultant on server transfers will be handled by the SCS SAP implementation project as agreed in principle during the discussion with the SCS SAP former project director.
- 41) After deliberation, the meeting noted the maintenance of the fisheries refugia website for long-term sustainability.

XIII. PROCEDURES AND TIMETABLE FOR CLOSURE OF PROJECT ACTIVITIES

- 42) Mr. Somboon Siriraksophon presented the tentative procedures and timetable for the closure of the project activities as shown in [Annex 17](#). This paper's objectives were to reiterate that all partner agencies must complete all national technical activities by 31 December 2022 and submit the related quarterly reports of Q4/2022 and the final country report to the PCU during the first month of 2023.
- 43) The partner agencies also noted the timeline as mentioned above.
- 44) He also informed the RSTC members that the PCU would address this issue again at the forthcoming PSC8 meeting in December 2022.

XIV. OTHER BUSINESS

- 45) Mr. Weerasak Yingyuad presented "SEAFDEC Moves Toward Sustainable Fisheries Management in Southeast Asia through the Promotion of Fisheries Refugia Concept" to introduce the SEAFDEC ongoing activities and new projects which support the Fisheries Refugia Concept for sustainable fisheries resource management in Southeast Asian region. He also informed the meeting on SEAFDEC capacity in various fields and research knowledge on science-based fisheries management which could apply to promote the fisheries refugia concept.
- 46) After deliberation, the RSTC Members noted the promotion of the Fisheries Refugia Concept through SEAFDEC programs and the potential technical support by SEAFDEC to their Member Countries.

XV. CLOSING REMARKS

- 47) Ms. Astri Suryandari appreciated the RSTC7 members and other participants for their valuable contributions over the last two and half days. She thanked the Project Coordination Unit and involved SEAFDEC/TD staff for their arrangements and for running a smooth event. Finally, on behalf of the hosted country, she wished all participants a safe journey back home.
- 48) Mr. Valeriano M. Borja, on behalf of the RSTC7 members, expressed his appreciation to Ms. Astri Suryandari, the Chairperson of the RSCT7 meeting, for her excellent leadership of the meeting. He also thanks the relevant agencies under the Ministry of Marine Affairs and Fisheries (MMAF) for the perfect logistics arrangements, meeting venue, excursion to the vicinity of Jakarta, and farewell dinner.

49) There was no further business the Chairperson closed the meeting at 16:30 hours.

ANNEX 1: LIST OF PARTICIPANTS

No	Country	Name	Position/Email Address
1.	Cambodia	Mr. Leng Sy Vann	National Scientific and Technical Focal Point for Cambodia Email: lengsyvann@gmail.com
2.	Indonesia	Ms. Astri Suryandari	National Scientific and Technical Focal Point for Indonesia Email: suryandari.astri@gmail.com
3.	Indonesia	Ms. Iswari Ratna Astuti	National Focal Point for Indonesia Email: iswariastuti@yahoo.com
4.	Indonesia	Dr. Ir. Toni Ruchimat, MSc	Regional Expert Email: truchimat@yahoo.com
5.	Malaysia	Mr. Sallehudin bin Jamon	National Scientific and Technical Focal Point for Malaysia Email: Sallehudin_jamon@dof.gov.my
6.	Malaysia	Mr. Jamil bin Musel	Alternate National Scientific and Technical Focal Point for Malaysia Email: jamilmusel@dof.gov.my
7.	Philippines	Mr. Valeriano M. Borja	National Scientific and Technical Focal Point for Philippines Email: valborja1029@gmail.com
8.	Philippines	Mr. Joeren S. Yleana	National Focal Point for Philippines Email: joerenyleana@yahoo.com
9.	Philippines	Hon. Alfonso Celeste	Municipal Mayor, Chairperson of Refugia Site Management Committee- Bolinao, Pangasinan
10.	Philippines	Ms. Blesilda Domagas	Municipal Administrator, Focal Person of Refugia Site Management Committee- Bolinao Pangasinan
11.	Philippines	Mr. Gerry Gevela	Municipal Agriculturist, Focal Person of Refugia Site Management Committee- Coron, Palawan
12.	Philippines	Ms. Olive Gregorio	Municipal Environment and Natural Resources officer, Focal Person of Refugia Site Management Committee- Masinloc, Zambales
13.	Thailand	Ms. Jinda Petchkamnerd	Biologist, Senior Professional level, Marine Fisheries Research and Development Division, Department of Fisheries Email: tangiinda@yahoo.com
14.	Thailand	Ms. Praulai Nootmorn	Acting Executive Advisor on Fishery Management, Department of Fisheries Thailand Email: nootmorn@yahoo.com
15.	Viet Nam	Dr. Pham Thi Thuy Linh	National Scientific and Technical Focal Point for Viet Nam Email: linhptt83@gmail.com
16.	Viet Nam	Mr. Le Tran Nguyen Hung	National Focal Point for Viet Nam Email: hungltn70@gmail.com
17.	Malaysia	Mr. Abd. Haris Hilmi bin Ahmad Arshad	Chief, SEAFDEC/MFRDMD, Malaysia Email: haris_arshad@seafdec.org.my
18.	SEAFDEC/TD	Dr. Taweekiet Amornpiyakrit	Senior Project Planning and Management Officer Email: taweekiet@seafdec.org
19.	SEAFDEC/TD	Mr. Weerasak Yingyuad	Project Planning and Management Officer Email: weerasak@seafdec.org
20.	SEAFDEC/TD	Mr. Sukchai Arnupapboon	Research and Development Division Head Email: sukchai@seafdec.org
21.	MMAF/Indonesia	Mr. Alza Rendian	Representative of SEAFDEC National Coordinator for Indonesia Email: alzarendian@gmail.com
22.	MMAF/Indonesia	Ms. Aira Zata Ismah	Local supporting officer
23.	MMAF/Indonesia	Mr. Hendri Kurniawan	Local supporting officer
24.	MMAF/Indonesia	Mr. Dzulfiqar B. Prasetyo	Local supporting officer

25.	MMAF/Indonesia	Ms. Fitri	Local supporting officer
26.	PCU	Dr. Somboon Siriraksophon	Project Director Email: ssiriraksophon63@gmail.com
27.	PCU	Ms. Nuttaya Phaisantawechok	Project Technical-Administration Officer Email: nuttaya.phaisan@gmail.com
28.	PCU	Ms. Nujara Somjit	Finance Officer nuchsarasomjit@gmail.com
29.	PCU	Mrs. Nathacha Sornvaree	Administrative Officer nathacha@seafdec.org

ANNEX 2: WELCOME SPEECH FROM SEAFDEC

Welcome Speech to the Seventh Meeting of the Regional Scientific and Technical Committee by SEAFDEC Secretary General

(To be delivered by Dr. Taweekiet Amornpiyakrit on behalf of SEAFDEC Secretary General)

- **MR. I Nyoman Radiarta**, Alternate SEAFDEC Council Director for INDONESIA,
- **Mr. Kusdiantoro**, Secretary for the Agency of Marine and Fisheries Research and Human Resources Development, Ministry of Marine Affairs and Fisheries, Indonesia
- **Mr. Jamil bin Musel**, the Chairperson of the Sixth Meeting of the Regional Scientific and Technical Committee
- Members of the National Scientific and Technical Focal Points
- Regional Experts,
- Distinguished guests
- Ladies and Gentlemen, a very good morning to you all.

My name's **Taweekiet AMORNPIYAKRIT**, Senior Project Planning and Management Officer and concurrently Special Departmental Coordinator from SEAFDEC Training Department. On behalf of SEAFDEC Secretary-General, **Madam Malinee Smithrithee**, I would like to convey a message from her to welcome everyone to the Seventh Meeting of the Regional Scientific and Technical Committee, which will be held from the 8th to the 10th of November 2022, at the Grand Mercure Harmoni-Jakarta, Indonesia. Unfortunately, she could not join this important event, which is the last for all regional and national experts to meet and discuss several technical matters aligning with the project target outputs and outcomes before the project ends in 2022. Before we begin today's session, please allow me to deliver a short speech to warm up everyone regarding today's critical issues.

Ladies and gentlemen, one of today's major topics of concern, is the progress from the country's implementation on establishing fisheries refugia at the selected fifteen (15) priority sites in six participating countries. It is an excellent effort from six countries that SEAFDEC, as an executing agency, would like to express our sincere appreciation for the success of the identification of a total fisheries refugia area which could reach about 1.1 million hectares which is four times greater than the GEF proposal. The session would also request the country to update the overall target outputs based on each proposed activity and followed by the experience notes from six countries that aim to share good practices from the project implementation on integrated management of fisheries and habitats to the GEF International Waters communities. Since this is the last meeting for the RSTC members, many technical issues, including administrative and financial matters, are included in the discussion. Before we kick off the other agenda, I would like to express my gratitude to you all who sincerely attend this event to make it a great success. The meeting wouldn't have been possible without the support of everyone present here.

Last but not least, I would like to express our sincere thanks to the host organizer led by Mr. Ari Prabowo, the SEAFDEC National Coordinator for Indonesia, concurrently the Head of Bureau for Public Relations and Foreign Cooperation, Secretariat General, MMAF of Indonesia, and his team for the excellent arrangements and support of the meeting.

Ladies and gentlemen, I hope you enjoy the meeting and have a pleasant stay in Jakarta.

Thank you very much.

ANNEX 3: OPENING REMARKS BY I NYOMAN RADIARTA

Assalamu'alaikum warahmatullahi wa barakatuh, Good morning and greeting to all of us

Om swastiastu, namo budaya, kind regards

Your honorable:

1. Director General of Capture Fisheries or the representative
2. Director General of Marine and Spatial Planning or the representative
3. Delegates of National Scientific and Technical Focal Point of SEAFDEC/UNEP/GEF Project on Fisheries Refugia from All Participating Countries
4. Representatives from SEAFDEC and UNEP
5. Esteemed speakers, guests, Representatives from the Project Partners as well as colleagues from Ministry of Marine Affairs and Fisheries

Very Good Morning, It is an honor for me to be able to welcome you all to the 7th Regional Scientific and Technical Committee Meeting for the SEAFDEC/UNEP/GEF Project Entitled "Establishment and Operation of A Regional System Of Fisheries Refugia In The South China Sea And Gulf Of Thailand".

Distinguished Delegates, Ladies and Gentlemen, The Regional Scientific and Technical Committee (RSTC) was established with responsibility for overseeing the scientific and technical elements of the project; ensuring effective implementation of activities undertaken during project execution; aside from that, providing scientific and technical advice to the Project Steering Committee.

Project activities will be concluded in December 2022, of course, many positive achievements have been attained, and all participating countries will commit to completing all output targets to the maximum extent possible in accordance with project goals and objectives. Through this meeting, I look forward that all participants will contribute to provide strategic input, sharing constructive information and lesson learnt among participating countries. In Indonesia, Fisheries Refugia is in line with and also supports the implementation of the Ministry of Marine Affairs and Fisheries program, namely The Quota-Based Fishing Policy, considering that in its application there are delimitation on fishing areas that can be utilized by taking into the condition of the status of fish stocks and critical fishery habitats.

Distinguished Delegates, Ladies and Gentlemen, Within the next three days meeting, we are hoping to have all information related updates and progress of project implementation from all Participating Countries, in addition potential challenges that need to be overcome. I believe, with good and solid collaboration we can achieve the agreement on how to accelerate and finalize all remain activities and hopefully can give positive contribution to the completion of project target and administrative matters.

Finally, I would like to express my highest appreciations for the tireless efforts made by the parties including organizing committee from Ministry of Marine Affairs and Fisheries, SEAFDEC and UNEP, and all the delegates.

Lastly, on behalf of the Ministry of Marine Affairs and Fisheries for Republic of Indonesia, please allow me, to officially open the meeting. I wish you all having a fruitful discussion and come up with successful results to finalize all achievements/outputs at national and regional levels, including reviewing lessons learned and what partners should keep doing at the end of the project.

ANNEX 4: LIST OF DOCUMENTS

INF.1	INFORMATION NOTES
INF.2A	PROVISIONAL PROSPECTUS
INF.2B	PROVISIONAL AGENDA AND TIMETABLE
INF.2C	ANNOTATED AGENDA
INF.3	LIST OF PARTICIPANTS
INF.4	LIST OF DOCUMENTS
WP.1	FINANCIAL MATTERS
WP.2	REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS ON WORK PROGRESS INCLUDING ISSUES AND CHALLENGES TOWARDS ACHIEVING TARGET OUTPUTS/OUTCOMES
WP.2A	REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS FOR CAMBODIA
WP.2B	REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS FOR INDONESIA
WP.2C	REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS FOR MALAYSIA
WP.2D	REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS FOR PHILIPPINES
WP.2E	REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS FOR THAILAND
WP.2F	REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS FOR VIET NAM
WP.2G	REPORTS OF REGIONAL PROGRAM BY PCU
WP.3	PROGRESS AND STATUS ON ESTABLISHING 15 FISHERIES REFUGIA AS OF 30 SEPTEMBER 2022
WP.4	STATUS OF THE REGIONAL TRAINING PROGRAMS ON FISH LARVAE
WP.5	REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS ON THE GEF IW EXPERIENCE NOTES
WP.5A	GEF IW EXPERIENCE NOTES FROM CAMBODIA
WP.5B	GEF IW EXPERIENCE NOTES FROM INDONESIA
WP.5C	GEF IW EXPERIENCE NOTES FROM MALAYSIA
WP.5D	GEF IW EXPERIENCE NOTES FROM PHILIPPINES
WP.5E	GEF IW EXPERIENCE NOTES FROM THAILAND
WP.5F	GEF IW EXPERIENCE NOTES FROM VIET NAM
WP.6	GOOD PRACTICES ON INTEGRATED MANAGEMENT OF FISHERIES AND HABITATS (FOLLOW-UP TASKS REQUESTED FROM THE SCS/SAP IMPLEMENTATION PROJECT)
WP.7	FINAL COUNTRY REPORT
WP.8	OPERATION OF THE PROJECT WEBSITE AND REGIONAL GIS AND META DATABASES
WP.9	PROCEDURES AND TIMETABLE FOR CLOSURE OF PROJECT ACTIVITIES (e.g., 2022 AUDIT REPORT, INVENTORY REPORT, TRANSFER OF NON-EXPENDABLE DOCUMENT)

ANNEX 5: ADOPTED AGENDA

DATE/TIME	AGENDA	REMARKS
8 NOV. (TUE)	DAY 1	
08:30-09:00	REGISTRATION	
09:00-09:20	1. OPENING OF THE MEETING	
	1.1 WELCOME SPEECH BY SEAFDEC (DR. TAWEEKIET AMORNPIYAKRIT)	
	1.2 KEYNOTE SPEECH BY CHAIRPERSON OF THE RSTC6 (MR. JAMIL BIN MUSEL)	
	1.3 OPENING REMARKS BY ALTERNATE COUNCIL DIRECTOR FOR INDONESIA (MR. I NYOMAN RADIARTA)	
09:20-09:40	2. HANDOVER CEREMONY	WILL BE FINALIZED
09:40-10:10	GROUP PHOTO AND REFRESHMENT	
10:10-10:30	3. ORGANIZATION OF THE MEETING	
	3.1 ELECTIONS OF OFFICERS	RSTC6 Chairperson
	3.2 DOCUMENTATIONS AVAILABLE TO THE MEETING	New RSTC7 Chair
	3.3 ADMINISTRATIVE ARRANGEMENTS	RSTC7 Chairperson
10:30-10:40	4. ADOPTION OF AGENDA	RSTC7 Chairperson
10:40-11:00	5. FINANCIAL MATTERS	PCU-PD
11:00-12:00	6. REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS ON WORK PROGRESS INCLUDING ISSUES AND CHALLENGES TOWARDS ACHIEVING THE TARGET OUTPUTS/OUTCOMES	RSTC7 Chairperson
	6.1 CAMBODIA 6.2 INDONESIA 6.3 MALAYSIA	NSTFP (CAMBODIA) NSTFP (INDONESIA) NFTFP (MALAYSIA)
12:00-13:30	LUNCH BREAK	
13:30-15:00	CONTINUED AGENDA 6	RSTC7 Chairperson
	6.4 PHILIPPINES 6.5 THAILAND 6.6 VIET NAM 6.7 REGIONAL PROGRAMS	NSTFP (PHILIPPINES) NSTFP (THAILAND) NSTFP (VIET NAM) PCU-PD
15:00-15:30	REFRESHMENT	
15:30-16:00	7. PROGRESS AND STATUS ON ESTABLISHING 15 FISHERIES REFUGIA AS OF 30 SEP. 2022	PCU-PD
16:10-16:30	8. STATUS OF THE REGIONAL TRAINING PROGRAMS ON FISH LARVAE	PCU-PD
16:30	END OF DAY 1	
9 NOV. (WED)	DAY 2	

09:00-10:30	9. REPORTS FROM NATIONAL SCIENTIFIC AND TECHNICAL FOCAL POINTS ON THE GEF IW EXPERIENCE NOTES	RSTC7 Chairperson
	9.1 CAMBODIA 9.2 INDONESIA 9.3 MALAYSIA 9.4 PHILIPPINES	NSTFP (CAMBODIA) NSTFP (INDONESIA) NSTFP (MALAYSIA) NSTFP (PHILIPPINES)
10:30-11:30	REFRESHMENT	
11:30-12:10	CONTINUED AGENDA 9	PCU-PD
	9.5 THAILAND 9.6 VIET NAM	NSTFP (THAILAND) NSTFP (VIET NAM)
12:10-13:30	LUNCH BREAK	
13:30-14:10	10. GOOD PRACTICES ON INTEGRATED MANAGEMENT OF FISHERIES AND HABITATS (FOLLOW-UP TASKS REQUESTED FROM THE SCS/SAP IMPLEMENTATION PROJECT)	RSTC7 Chairperson PCU-PD
14:10-15:00	11. FINAL COUNTRY REPORT	RSTC7 Chairperson PCU-PD
15:00-15:30	REFRESHMENT	
15:30-16:30	12. OPERATION OF THE PROJECT WEBSITE AND REGIONAL GIS AND META DATABASES	RSTC7 Chairperson PCU-PD
16:30	END OF DAY 2	
Will be confirmed	RECEPTION DINNER AT BANDAR JAKARTA ANCOL SEAFOOD RESTAURANT	
10 NOV. (THU)	DAY 3	
09:00-10:30	13. PROCEDURES AND TIMETABLE FOR CLOSURE OF PROJECT ACTIVITIES	RSTC7 Chairperson
	13.1 FINAL AUDIT REPORT AND TIMELINE 13.2 INVENTORY REPORT OF ALL NON-EXPENDABLE EQUIPMENT 13.3 TRANSFER OF NON-EXPENDABLE EQUIPMENT 13.4 OTHERS	PCU-PD
10:30-10:50	REFRESHMENT	
10:50-11:20	14. PROJECT CLOSING MEETING SCHEDULE	RSTC7 Chairperson PCU-PD
11:20-11:40	15. ANY OTHER BUSINESS	RSTC7 Chairperson
11:40-12:00	CLOSURE OF THE MEETING	RSTC7 Chairperson, NSTFP REPRESENTATIVES, SEAFDEC
12:00-13:00	LUNCH BREAK	
13:00-20:00	NETWORKING EXCURSIONS	HOST COUNTRY

ANNEX 6: FINANCIAL MATTERS

1. STATUS OF BUDGET ALLOCATION TO EXECUTED PARTNERS (6 COUNTRIES + SEAFDEC)

The initial budget allocation endorsed by GEF/CEO was calculated based on the Number of project sites for 6 executed country partners for national programs and to SEAFDEC/Project Coordination Unit for regional program. Table 1 shows the budget adjustments at national and regional levels since project started in 2016 until September 2022.

Table 1: Adjustments of the budget allocation to six-countries partners and SEAFDEC/PCU from 2016-22

Partners	Budget Allocation Adjustments from 2016-2022			
	Initial Budget (2016-2019)	10% Reduction for 2 years extension (2020-2022)*	Adjustment as of 31 March 2022**	Total Budget Allocation
Cambodia	297,500.00	(17,408.46)	+20,000	300,091.54
Indonesia	248,000.00	(23,170.99)		224,829.01
Malaysia	248,000.00	(18,335.60)		229,664.40
Philippines	297,500.00	(20,372.85)		277,127.15
Thailand	248,000.00	(17,461.69)	+ 3,000	233,538.31
Viet Nam	297,500.00	(29,750.00)	(145,320.66)	122,429.34
SEAFDEC/PCU	1,363,500.00	+126,499.59	+122,320.66	1,612,320.25
TOTAL	3,000,000.00	-	-	3,000,000.00

Remark: * Reference to PSC3 Ad-Hoc Meeting on 16 June 2020

** Reference to 4th Budget Revision as of 31 March 2022 endorsed at PSC7 on 27 May 2022

2. ACTUAL EXPENDITURES AS OF 30 SEPTEMBER 2022

The actual cumulative expenditures for previous years (2016-2021) reported by auditors is USD 1,925,046.37, while the estimated expenditure in 2022 from Q1-Q3 is USD 241,910.25. Accordingly, the total cumulative expenditures as of 30 September 2022 is USD 2,166,956.62. The balance budget for Q4/2022 is USD 833,043.38 (see Table 2).

Table 2: Expenditure statement as of 30 September 2022

Annex 13 - QUARTERLY EXPENDITURE STATEMENT and UNLIQUIDATED OBLIGATIONS REPORT (US\$)*												
Project title:		Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand										
Project number:												
Project implementing agency/organization:		Southeast Asian Fisheries Development Center (SEAFDEC)										
Project implementation period:		From: August, 2016					To: Dec. 2022					
Reporting period:		From: 01-Jul-22					To: 30-Sep-22					
UNEP Budget Line		UNEP approved budget			Actual expenditures incurred**							
		Total project budget *	Current YEAR budget (in 2022)	Cumulative expenditures for current YEAR	Disbursements for current QUARTER	Adjustment based on Audit report 2021	Total expenditures for current QUARTER	Total expenditures for current YEAR	Cumulative expenditures for previous YEARS	Cumulative expenditures for previous YEARS (after adjustment)	Total cumulative expenditures to date	Cumulative unspent balance to-date
		A	B	C	D	E	F=D	G=C+F	H	H' = H+E	I=H+H'	J=A-I
1100	Project personnel	236,805.80	61,734.12	19,096.84	11,806.57	(4,506.33)	11,806.57	30,903.41	171,318.96	166,812.63	197,716.04	39,089.76
1200	Consultants	1,276,585.57	312,011.69	92,715.36	2,714.93	0.01	2,714.93	95,430.29	922,830.33	922,830.34	1,018,260.63	258,324.94
1300	Administrative support	-	-	-	-	-	-	-	-	-	-	-
1600	Travel on official business	270,657.06	41,140.15	4,099.93	1,939.78	(1.29)	1,939.78	6,039.71	236,887.89	236,886.60	242,926.31	27,730.75
2100	Sub-contracts (UN entities)	-	-	-	-	-	-	-	-	-	-	-
2200	Sub-contracts (supporting organizations)	214,386.66	155,306.54	3,000.00	3,700.00	-	3,700.00	6,700.00	138,578.82	138,578.82	145,278.82	69,107.84
2300	Sub-contracts (for commercial purposes)	81,387.73	26,013.30	-	-	-	-	-	54,875.16	54,875.16	54,875.16	26,512.57
3200	Group training	296,696.23	130,409.66	13,461.31	22,721.18	(4,097.50)	22,721.18	36,182.49	143,301.96	139,204.46	175,386.95	121,309.28
3300	Meetings/Conferences	425,864.50	193,183.57	10,492.22	28,652.65	4,109.64	28,652.65	39,144.87	177,357.50	181,467.14	220,612.01	205,252.49
4100	Expendable equipment	8,786.54	4,591.04	923.44	1,770.14	-	1,770.14	2,693.58	3,478.68	3,478.68	6,172.26	2,614.28
4200	Non-expendable equipment	44,000.00	-	377.00	-	(66.45)	-	377.00	43,709.59	43,643.14	44,020.14	(20.14)
4300	Premises	15,266.00	4,819.28	-	1,307.04	-	1,307.04	1,307.04	13,766.00	13,766.00	15,073.04	192.96
5100	Operation and maintenance of equipment	3,351.87	2,270.86	985.44	155.00	2.00	155.00	1,140.44	776.73	776.73	1,919.17	1,432.70
5200	Reporting costs	35,388.64	22,801.59	1,987.44	3,811.51	(6.17)	3,811.51	5,798.95	10,129.58	10,123.41	15,922.36	19,466.28
5300	Sundry	12,823.40	1,980.69	914.60	877.87	1,473.23	877.87	1,792.47	7,528.03	9,001.26	10,793.73	2,029.67
5400	Hospitality and entertainment	-	-	-	-	-	-	-	-	-	-	-
5500	Evaluation	78,000.00	67,200.00	14,400.00	-	-	-	14,400.00	3,600.00	3,600.00	18,000.00	60,000.00
99	GRAND TOTAL	3,000,000.00	1,023,462.49	162,453.58	79,456.67	(3,092.86)	79,456.67	241,910.25	1,928,139.23	1,925,046.37	2,166,956.62	833,043.38

Notes * Refers to the 4th Budget Revision as of 31 March 2022, endorsed by the Seventh Meeting of the Project Steering Committee on 27 May 2022

3. ACTUAL EXPENDITURES PER FINANCIAL AUDIT REPORT

Since the project inception phase has been started in 2016; Cambodia, Philippines, Thailand, and Malaysia signed the agreement in 2017, later Viet Nam and Indonesia signed in 2019. However, the first financial audit at country and the consolidated financial statements have been conducted in 2018, 2019, 2020, and 2021 respectively. At the seventh meeting of the Project Steering Committee (PSC7) in May 2022, the PCU proposed expenditure adjustments per the financial audit reports at country level since 2017-2020 (Table 3). Reference to the 2021 financial audit report, the PCU found the variances with the expenditures reported to SEAFDEC/PCU, accordingly it is necessary to inform country the variances to ensure that the actual budget remaining in the accounts can be utilized effectively as shown in Table 4.

Table 3: Actual Expenditures based on the Financial Audit Report of 2018, 2019, and 2020.

Year		CAMBODIA	INDONESIA	MALAYSIA	PHILIPPINES
As of 31 DECEMBER 2018	Expenditures	52,036.11	-	19,884.00	26,498.14
	Actual Expenditures	52,036.11	-	19,884.00	26,498.14
	VARIANCE		-	-	-
2019	Expenditures	71,378.25	16,290.12	44,760.00	67,273.36
	Actual Expenditures	71,378.25	16,290.12	43,236.60	67,282.88
	VARIANCE		-	(1,523.40)	9.52
2020	Expenditures	50,002.22	55,706.56	31,705.75	28,326.37
	Actual Expenditures	49,991.90	55,694.40	32,671.65	27,851.83
	VARIANCE	(10.32)	(12.16)	965.90	(474.54)
As of 31 DECEMBER 2020	Cumulative Expenditures	173,416.58	71,996.68	96,349.75	122,097.87
	Cumulative actual expenditures	173,406.26	71,984.52	95,792.25	121,632.85
	TOTAL VARIANCE	(10.32)	(12.16)	(557.50)	(465.02)

Table 4: Actual Expenditures based on the Financial Audit Report of 2021.

YEAR		CAMBODIA	INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
2021	Expenditures	30,518.58	88,700.00	10,032.37	46,487.74	38,773.55
	Actual Expenditures	30,547.58	88,837.92	10,053.40	41,899.91	38,772.26
	VARIANCE	(29.00)	(137.92)	(21.03)	4,587.83	1.29

(Refers to Appendix A1-A4)

4. CO-FINANCING

The calculation of co-financing was discussed and endorsed by the Project Steering Committee (refers to PSC1_Annex 12_Co-Finance Calculation). The PCU has compiled the co-finance from 6 countries partners and SEAFDEC PCU, annually in 2017, 2018, and quarterly since 2019, respectively (Table 4).

		CAMBODIA	INDONESIA*	MALAYSIA	PHILIPPINES	THAILAND	VIET NAM*	ALL COUNTRY	SEAFDEC	TOTAL
Co-finance COMMITTED (A)	In-kind	1,473,235	609,107	443,424	647,300	783,888	1,079,852	5,036,806	2,456,000	7,492,806
	Cash	65,488	581,776	92,500	203,880	129,800	7,520	1,080,964	3,876,400	4,957,364
	Sub-Total (A)	1,538,723	1,190,883	535,924	851,180	913,688	1,087,372	6,117,770	6,332,400	12,450,170
2017 Actual Co-finance	In-kind	253,632	-	160,736	199,392	98,016	-	711,776	209,344	
	Cash	1,850	-	32,500	7,326	22,922	-	64,598	122,360	
	Sub-Total (B1)	255,482		193,236	206,718	120,938		776,374	331,704	
2018 Actual Co-finance	In-kind	247,392	-	412,192	191,712	200,512	-	1,051,808	668,096	
	Cash	1,248	-	79,423	19,119	132,050	-	231,840	425,075	
	Sub-Total (B2)	248,640		491,615	210,831	332,562		1,283,648	1,093,171	
2019 Q1-Q2 Actual Co-finance	In-kind	161,920	-	183,296	218,656	108,096	-	671,968	99,968	
	Cash	5,320	-	41,474	5,947	-	-	52,741	48,706	
	Sub-Total (B2)	167,240		224,770	224,603	108,096		724,709	148,674	
2019 Q3-Q4 Actual Co-finance	In-kind	174,496	115,936	162,576	434,656	99,296	-	986,960	242,528	
	Cash	890	-	66,487	53,045	95,804	-	216,226	192,118	
	Sub-Total (B2)	175,386	115,936	229,063	487,701	195,100		1,203,186	434,646	
2020 Q1+Q2 Actual Co-finance	In-kind	140,096	85,536	94,816	338,496	101,376	-	760,320	80,288	
	Cash	3,800	-	5,802	3,430	-	-	13,032	21,600	
	Sub-Total (B2)	143,896	85,536	100,618	341,926	101,376		773,352	101,888	
2020 Q3 Actual Co-finance	In-kind	140,528	120,528	51,618	144,048	127,728	-	584,450	50,784	
	Cash	1,950	-	-	4,563	-	-	6,513	14,500	
	Sub-Total (B2)	142,478	120,528	51,618	148,611	127,728		590,963	65,284	
2020 Q4 Actual Co-finance	In-kind	101,168	48,208	66,618	144,848	65,488	42,768	469,098	281,184	
	Cash	1,500	-	41,914	4,563	-	500,000	547,976	99,600	
	Sub-Total (B2)	102,668	48,208	108,532	149,411	65,488	542,768	1,017,074	380,784	
2021 Q1 Actual Co-finance	In-kind	95,568	57,488	45,618	42,768	122,288	42,768	406,498	140,464	
	Cash	1,950	-	1,816	-	-	-	3,766	16,092	
	Sub-Total (B2)	97,518	57,488	47,434	42,768	122,288	42,768	410,264	156,556	
2021 Q2 Actual Co-finance	In-kind	95,248	47,888	46,768	217,968	60,528	42,768	511,168	107,744	
	Cash	1,100	-	1,848	10,096	-	-	13,044	8,807	
	Sub-Total (B2)	96,348	47,888	48,616	228,064	60,528	42,768	524,212	116,551	
2021 Q3 Actual Co-finance	In-kind	94,448	68,368	62,388	227,088	68,688	47,768	568,748	4,498,784	
	Cash	6,600	-	1,948	10,698	-	392,000	411,246	2,708,829	
	Sub-Total (B2)	101,048	68,368	64,336	237,786	68,688	439,768	979,994	7,207,613	8,187,607
2021 Q4 Actual Co-finance	In-kind	71,248	71,728	54,018	317,108	70,768	42,768	627,638	364,384	
	Cash	46,600	-	2,162	19,166	-	-	67,928	461,231	
	Sub-Total (B2)	117,848	71,728	56,180	336,274	70,768	42,768	695,566	825,615	
2022 Q1 Actual Co-finance	In-kind	54,288	42,768	42,768	42,768	63,088	42,768	288,448	131,904	
	Cash	650	-	-	-	-	-	650	13,202	
	Sub-Total (B2)	54,938	42,768	42,768	42,768	63,088	42,768	289,098	145,106	
2022 Q2 Actual Co-finance	In-kind	56,688	58,128	45,968	90,928	66,128	42,768	360,608	237,184	
	Cash	700	-	-	4,256	-	-	4,956	39,312	
	Sub-Total (B2)	57,388	58,128	45,968	95,184	66,128	42,768	365,564	276,496	
Total Co-finance as of 30 JUN. 2022	In-kind (US\$)	1,686,720	716,576	1,429,380	2,610,436	1,252,000	304,376	7,999,488	7,112,656	15,112,144
	Cash (US\$)	74,158	-	275,373	142,208	250,776	892,000	1,634,516	4,171,433	5,805,948
Grand Total Co-finance as of 31 December 2021		1,760,878	716,576	1,704,753	2,752,644	1,502,776	1,196,376	9,634,004	11,284,089	20,918,092
Co-finance needs until the project end (C = A-(B1+B2))		(222,155)	474,307	(1,168,829)	(1,901,464)	(589,088)	(109,004)	(3,516,234)	(4,951,689)	(8,467,922)

A total co-financing committed by six countries are USD 6,111,777 consisted of USD 5,036,806 in-kind and USD 1,148,644 in cash. SEAFDEC's project executing agency committed a total of 6,332,400 consisted of

USD 2,456,000 in-kind and USD 3,876,400 in cash. The results from partners implementations show the total actual co-financing from six countries is USD 9,634,000 higher than the proposed proposal about 3.5 million USD. In addition, SEAFDEC also provides the co-financing of USD 11,284,000 higher than the proposed proposal about 4.95 million USD.

In June 2022, the PCU received a new template from UNEP on reporting of co-financing. Regarding this, the CPU enclosed all country co-finance report for reference as shown in **Appendix B1-7** for Cambodia, Indonesia, Malaysia, Philippines, Thailand, Viet Nam and SEAFDEC, respectively.

Appendix A1: CAMBODIA

Expenditure Financial Report 2021		Expenditure Audit Report 2021		Difference USD
Period	USD	Component	USD	
Q1/2021	3,095.25	1/2021	13,547.50	
Q2/2021	9,425.71	2/2021	4,950.00	
Q3/2021	7,583.25	3/2021	8,100.00	
Q4/2021	10,414.37	4/2021	3,950.08	
Total	30,518.58	Total	30,547.58	(29.00)
Adjust Expenditure 2021				(29.00)

Appendix A2: INDONESIA

Expenditure Financial Report 2021		Expenditure Audit Report 2021		Difference USD
Period	USD	Component	USD	
Q1/2021	15,600.00	1/2021	60,837.92	
Q2/2021	15,450.00	2/2021	28,000.00	
Q3/2021	42,950.00	3/2021	-	
Q4/2021	14,700.00	4/2021	-	
Total	88,700.00	Total	88,837.92	(137.92)
		Bank Interest		0.73
Adjust Expenditure 2021				(137.19)

Appendix A3: MALAYSIA

Expenditure Financial Report 2021		Expenditure Audit Report 2021		Difference USD
Period	USD	Component	USD	
Q1/2021	483.09	1/2021	476.76	
Q2/2021	7,085.51	2/2021	2,288.44	
Q3/2021	-	3/2021	7,135.64	
Q4/2021	2,463.77	4/2021	152.56	
Total	10,032.37	Total	10,053.40	
		Bank Interest		(5.00)
		Loss in Exchange		(514.84)
Adjust Expenditure 2021				(540.87)

Appendix A4: PHILIPPINES

Expenditure Financial Report 2021		Expenditure Audit Report 2021		Difference USD
Period	USD	Component	USD	
Q1/2021	606.84	1/2021	21,354.26	
Q2/2021	3,523.68	2/2021	5,000.00	
Q3/2021	219.63	3/2021	4,800.00	
Q4/2021	42,137.59	4/2021	10,745.65	
Total	46,487.74	Total	41,899.91	
		Excess fund Audit service & Gain		60.01
		Loss in Exchange		(788.47)
Adjust Expenditure 2021				3,859.37

Appendix A5: THAILAND

REPORT 2021				
Expenditure Financial Report 2021		Expenditure Audit Report 2021		Difference
Period	USD	Component	USD	USD
Q1/2021	15,004.07	1/2021	14,303.82	
Q2/2021	6,466.20	2/2021	9,968.63	
Q3/2021	6,471.65	3/ 199%	12,688.83	
Q4/2021	10,831.63	4/2021	1,810.98	
Total	38,773.55	Total	38,772.26	1.29
Adjust Expenditure 2021				1.29

Appendix B1: Cambodia**CAMBODIA 2017**

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	171,072
(select)	FiA	In-kind	(select)	82,560
(select)	IUCN/MFF and MCC	(select)	(select)	750
(select)	FFI-Cambodia	(select)	(select)	1,100
Total Co-financing				255,482

CAMBODIA 2018

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	171,072
(select)	FiA	In-kind	(select)	73,120
(select)	DFC/FiA	In-kind	(select)	3,200
(select)	IUCN/MFF and MCC	(select)	(select)	748
(select)	MCC	(select)	(select)	500
Total Co-financing				248,640

CAMBODIA 2019 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
(select)	FiA	In-kind	(select)	103,200
(select)	WEA	(select)	(select)	600
(select)	WEA & Nataya Resort	(select)	(select)	500
(select)	MCC	(select)	(select)	1,000
(select)	FiAC in Koh Kong	In-kind	(select)	5,760
(select)	FiAC in Koh Kong	(select)	(select)	150
(select)	FiAC in Kep	In-kind	(select)	2,880
(select)	FiAC in Kep	(select)	(select)	150
(select)	MCC and IUCN	(select)	(select)	320
(select)	FiA and Kampot Provincial Administration	In-kind	(select)	1,600
(select)	FiA	(select)	(select)	300
(select)	FiA, Seafdec and USAID Ocean	In-kind	(select)	2,400

(select)	USAID Ocean	(select)	(select)	2,000
(select)	FiAC in Koh Kong and Provincial Administration	In-kind	(select)	7,680
(select)	FiAC in Koh Kong and Provincial Administration	(select)	(select)	150
(select)	FiAC in Kep	In-kind	(select)	19,200
(select)	FiAC in Kep	(select)	(select)	150
Total Co-financing				233,576

CAMBODIA 2019 (Q3-Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
(select)	FiA	In-kind	(select)	55,360
(select)	MCC	(select)	(select)	200
(select)	MAFF and FiA	In-kind	(select)	4,800
(select)	MAFF	(select)	(select)	40
(select)	FiAC	In-kind	(select)	28,800
(select)	FiAC and Kep Provincial Hall Administration	(select)	(select)	150
(select)	FiA	(select)	(select)	500
Total Co-financing				175,386

CAMBODIA 2020 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
(select)	FiA	In-kind	(select)	54,560
(select)	WEA,IUCN	(select)	(select)	500
(select)	MCC	(select)	(select)	500
(select)	FiA	(select)	(select)	900
(select)	FFI,WCS	(select)	(select)	700
(select)	FFI,FiA	(select)	(select)	1,200
Total Co-financing				143,896

CAMBODIA 2020 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
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(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	FiA	In-kind	(select)	97,760
(select)	FFI and WCS	(select)	(select)	1,000
(select)	KAMPOT FIAC	(select)	(select)	150
(select)	FiA	(select)	(select)	200
(select)	FIAC in KEP	(select)	(select)	600
Total Co-financing				142,478

CAMBODIA 2020 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	FiA	In-kind	(select)	58,400
(select)	KeP PDoA and Provincial Hall Administration	(select)	(select)	550
(select)	FiAC	(select)	(select)	100
(select)	FiAC-Koh Kong	(select)	(select)	850
Total Co-financing				102,668

CAMBODIA 2021 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	FiA	In-kind	(select)	52,800
(select)	KEP PDoA	(select)	(select)	550
(select)	FiAC and WEA	(select)	(select)	800
(select)	FiAC in Koh kong	(select)	(select)	600
Total Co-financing				97,518

CAMBODIA 2021 (Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	FiA	In-kind	(select)	52,480
(select)	FiAC	(select)	(select)	1,100

Total Co-financing			96,348
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CAMBODIA 2021 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	FiA	In-kind	(select)	51,680
(select)	WEA	(select)	(select)	600
(select)	FiAC	(select)	(select)	6,000
Total Co-financing				101,048

CAMBODIA 2021 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	FiA	In-kind	(select)	28,480
(select)	FiA and WEA	(select)	(select)	200
(select)	FiA, FFI, and WCS	(select)	(select)	800
(select)	FiA and FiAC	(select)	(select)	600
(select)	FiA and MCC	(select)	(select)	45,000
Total Co-financing				117,848

CAMBODIA 2022 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	FiA	In-kind	(select)	11,520
(select)	MAFF	(select)	(select)	350
(select)	FiAC	(select)	(select)	300
Total Co-financing				54,938

Appendix B2: INDONESIA**INDONESIA 2019**

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
(select)	AMFRHR	In-kind	(select)	30,400
Total Co-financing				115,936

INDONESIA 2020 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
Total Co-financing				85,536

INDONESIA 2020 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	RIFE	In-kind	(select)	77,760
Total Co-financing				120,528

INDONESIA 2020 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	RIFE	In-kind	(select)	5,440
Total Co-financing				48,208

INDONESIA 2021 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768

(select)	MFM	In-kind	(select)	14,720
Total Co-financing				57,488

INDONESIA 2021 (Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	MFM	In-kind	(select)	5,120
Total Co-financing				47,888

INDONESIA 2021 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	AMFRHR	In-kind	(select)	25,600
Total Co-financing				68,368

INDONESIA 2021 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	MMAF	In-kind	(select)	28,960
Total Co-financing				71,728

INDONESIA 2022 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	MMAF	(select)	(select)	206,531
Total Co-financing				249,299

Appendix B3: MALAYSIA**MALAYSIA 2017**

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
(select)	DOF	In-kind	(select)	75,200
(select)	DOF	(select)	(select)	32,500
Total Co-financing				193,236

MALAYSIA 2018

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	171,072
(select)	DOF	In-kind	(select)	241,120
(select)	DOF	(select)	(select)	79,423
Total Co-financing				491,615

MALAYSIA 2019 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
(select)	DOF	In-kind	(select)	97,760
(select)	DOF	(select)	(select)	41,474
Total Co-financing				224,770

MALAYSIA 2019 (Q3-Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
(select)	DOF	In-kind	(select)	77,040
(select)	DOF	(select)	(select)	66,487
Total Co-financing				229,063

MALAYSIA 2020 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536
(select)	DOF	In-kind	(select)	9280.00
(select)	DOF	(select)	(select)	5801.92
Total Co-financing				100,617.92

MALAYSIA 2020 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	DOF	In-kind	(select)	8,850
Total Co-financing				51,618

MALAYSIA 2020 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	DOF	In-kind	(select)	23,850
(select)	DOF	(select)	(select)	41,913.83
Total Co-financing				108,531.83

MALAYSIA 2021 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	DOF	In-kind	(select)	2,850
(select)	DOF	(select)	(select)	1,816.42
Total Co-financing				47,434.42

MALAYSIA 2021 (Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	DOF	In-kind	(select)	4,000
(select)	DOF	(select)	(select)	1,847.83
Total Co-financing				48,615.83

MALAYSIA 2021 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	DOF	In-kind	(select)	19,620
(select)	DOF	(select)	(select)	1,948
Total Co-financing				64,336

MALAYSIA 2021 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768
(select)	DOF	In-kind	(select)	11,250
(select)	DOF	(select)	(select)	2,161.84
Total Co-financing				56,179.84

Appendix B4: PHILIPPINES**PHILIPPINES 2017**

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	171,072.00
(select)	NFRDI	In-kind	(select)	27,360.00
(select)	PCU	In-kind	(select)	960.00
(select)	NFRDI Counterpart funds	(select)	(select)	7,325.83
Total Co-financing				206,717.83

PHILIPPINES 2018

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	171,072.00
(select)	NFRDI	In-kind	(select)	20,640.00
(select)	NFRDI Counterpart funds	(select)	(select)	19,118.59
Total Co-financing				210,830.59

PHILIPPINES 2019 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536.00
(select)	NFRDI	In-kind	(select)	133,120.00
(select)	NFRDI Funds	(select)	(select)	5,946.86
Total Co-financing				224,602.86

PHILIPPINES 2019 (Q3-Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536.00
(select)	NFRDI	In-kind	(select)	349,120.00
(select)	NFRDI Funds	(select)	(select)	15,295.02
(select)	SEAFDEC-UNEP-GEF	(select)	(select)	37,750.00
Total Co-financing				487,701.02

PHILIPPINES 2020 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536.00
(select)	SEAFDEC-UNEP-GEF	In-kind	(select)	144,000.00
(select)	NFRDI	In-kind	(select)	117,760.00
(select)	NFRDI Funds	(select)	(select)	3,430.24
Total Co-financing				350,726.24

PHILIPPINES 2020 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	NFRDI	In-kind	(select)	89,280.00
(select)	DA-SPCMAD	In-kind	(select)	12,000.00
(select)	NFRDI Counterpart Funds	(select)	(select)	4,562.64
Total Co-financing				148,610.64

PHILIPPINES 2020 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	NFRDI	In-kind	(select)	102,080.00
(select)	NFRDI Counterpart Funds	(select)	(select)	4,562.64
Total Co-financing				149,410.64

PHILIPPINES 2021 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
Total Co-financing				42,768.00

PHILIPPINES 2021 (Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	NFRDI	In-kind	(select)	175,200.00
(select)	NFRDI - Counterpart	(select)	(select)	10,096.04
Total Co-financing				228,064.04

PHILIPPINES 2021 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	NFRDI	In-kind	(select)	184,320.00
(select)	NFRDI Funds	(select)	(select)	10,698.04
Total Co-financing				237,786.04

PHILIPPINES 2021 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	NFRDI	In-kind	(select)	274,340.00
(select)	NFRDI	(select)	(select)	19,166.03
Total Co-financing				336,274.03

Appendix B5: THAILAND**THAILAND 2017**

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536.00
(select)	DOF	In-kind	(select)	12,480.00
(select)	DOF	(select)	(select)	22,922.13
Total Co-financing				120,938.13

THAILAND 2018

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	171,072.00
(select)	DOF	In-kind	(select)	29,440.00
(select)	DOF	(select)	(select)	132,050.16
Total Co-financing				332,562.16

THAILAND 2019 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536.00
(select)	DOF	In-kind	(select)	22,560.00
Total Co-financing				108,096.00

THAILAND 2019 (Q3-Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536.00
(select)	DOF	In-kind	(select)	12,320.00
(select)	ARDA	(select)	(select)	95,804.17
Total Co-financing				193,660.17

THAILAND 2020 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	85,536.00
(select)	DOF, DMCR, KU, Sustainable Development Foundation	In-kind	(select)	6,240.00
(select)	DOF	In-kind	(select)	9,600.00
Total Co-financing				101,376.00

THAILAND 2020 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	DOF	In-kind	(select)	84,960.00
Total Co-financing				127,728.00

THAILAND 2020 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	DOF	In-kind	(select)	22,720.00
Total Co-financing				65,488.00

THAILAND 2021 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	DOF	In-kind	(select)	79,520.00
Total Co-financing				122,288.00

THAILAND 2021 (Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
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(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	DOF	In-kind	(select)	17,760.00
Total Co-financing				60,528.00

THAILAND 2021 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	DOF	In-kind	(select)	25,920.00
Total Co-financing				68,688.00

THAILAND 2021 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	DOF	In-kind	(select)	28,000.00
Total Co-financing				70,768.00

THAILAND 2022 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)	DOF, DMCR, GISTDA, KU, and SEAFDEC/PCU	In-kind	(select)	2,880.00
(select)	DOF, DMCR	In-kind	(select)	3,040.00
(select)	DOF	In-kind	(select)	14,400.00
Total Co-financing				63,088.00

Appendix B6: VIET NAM**VIET NAM 2020 (Q4)**

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)		(select)	(select)	500,000.00
Total Co-financing				542,768.00

VIET NAM 2021 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
Total Co-financing				42,768.00

VIET NAM 2021 (Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
Total Co-financing				42,768.00

VIET NAM 2021 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
(select)		(select)	(select)	392,000.00
(select)	D-Fish	In-kind	(select)	5,000.00
Total Co-financing				439,768.00

VIET NAM 2021 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
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(select)	Overheads for NFRC and NSTC	In-kind	(select)	42,768.00
Total Co-financing				42,768.00

Appendix B7: SEAFDEC

SEAFDEC 2016-7

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	173,184.00
(select)	PCU/ Refugia	In-kind	(select)	3,840.00
(select)	SEAFDEC	In-kind	(select)	31,040.00
(select)	SEAFDEC/ FiA	In-kind	(select)	1,280.00
(select)	SEAFDEC / Sweden	(select)	(select)	98,360.32
(select)	SEAFDEC/ TD	(select)	(select)	24,000.00
Total Co-financing				331,704.32

SEAFDEC 2018

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	115,456.00
(select)	SEAFDEC/ SEC	In-kind	(select)	72,480.00
(select)	SEAFDEC/ TD	In-kind	(select)	463,520.00
(select)	SEAFDEC	In-kind	(select)	16,640.00
(select)	SEAFDEC / Sweden	(select)	(select)	120,449.09
(select)	SEAFDEC/ JAPAN	(select)	(select)	250,625.56
(select)	SEAFDEC Donor/China	(select)	(select)	26,000.00
(select)	SEAFDEC PARTNERS	(select)	(select)	4,000.00
(select)	SEAFDEC/ TD	(select)	(select)	24,000.00
Total Co-financing				1,093,170.65

SEAFDEC 2019 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	57,728.00
(select)	SEAFDEC	In-kind	(select)	19,200.00
(select)	SEAFDEC/ SEC	In-kind	(select)	23,040.00
(select)	SEAFDEC / Sweden	(select)	(select)	33,705.73

(select)	SEAFDEC PARTNERS	(select)	(select)	3,000.00
(select)	SEAFDEC/TD	(select)	(select)	12,000.00
Total Co-financing				148,673.73

SEAFDEC 2019 (Q3-Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	57,728.00
(select)	SEAFDEC	In-kind	(select)	184,800.00
(select)	SEAFDEC / Sweden	(select)	(select)	96,539.21
(select)	SEAFDEC PARTNERS	(select)	(select)	83,579.13
(select)	SEAFDEC/TD	(select)	(select)	12,000.00
Total Co-financing				434,646.34

SEAFDEC 2020 (Q1-Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	57,728.00
(select)	SEAFDEC	In-kind	(select)	22,560.00
(select)	SEAFDEC	(select)	(select)	4,900.00
(select)	SEAFDEC/JTF	(select)	(select)	4,500.00
(select)	SEAFDEC/TD	(select)	(select)	12,200.00
Total Co-financing				101,888.00

SEAFDEC 2020 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	28,864.00
(select)	SEAFDEC	In-kind	(select)	21,920.00
(select)	SEAFDEC/JTF	(select)	(select)	500.00
(select)	SEAFDEC/TD	(select)	(select)	14,000.00
Total Co-financing				65,284.00

SEAFDEC 2020 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	28,864.00
(select)	SEAFDEC	In-kind	(select)	252,320.00
(select)	SEAFDEC/JTF	(select)	(select)	500.00
(select)	SEAFDEC/TD	(select)	(select)	98,600.00
(select)	SEAFDEC/SEC	(select)	(select)	500.00
Total Co-financing				380,784.00

SEAFDEC 2021 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	28,864.00
(select)	SEAFDEC	In-kind	(select)	111,600.00
(select)	SEAFDEC	(select)	(select)	10,092.00
(select)	SEAFDEC/TD	(select)	(select)	6,000.00
Total Co-financing				156,556.00

SEAFDEC 2021 (Q2)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	28,864.00
(select)	SEAFDEC	In-kind	(select)	78,880.00
(select)	SEAFDEC	(select)	(select)	2,807.00
(select)	SEAFDEC/TD	(select)	(select)	6,000.00
Total Co-financing				116,551.00

SEAFDEC 2021 (Q3)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	28,864.00
(select)	AQD	In-kind	(select)	27,200.00
(select)	MFRDMD	In-kind	(select)	211,200.00
(select)	SEAFDEC	In-kind	(select)	432,960.00
(select)	SEAFDEC/SEC	In-kind	(select)	861,600.00
(select)	SEC + IFRDMD	In-kind	(select)	34,080.00

(select)	SEC + MFRD	In-kind	(select)	37,440.00
(select)	SEC + MFRDMD	In-kind	(select)	41,280.00
(select)	SEC + TD	In-kind	(select)	39,840.00
(select)	SEAFDEC/TD	In-kind	(select)	2,815,040.00
(select)	SEAFDEC	(select)	(select)	1,117,014.93
(select)	SEAFDEC/JTF	(select)	(select)	1,224,596.55
(select)	IDB	(select)	(select)	74,000.00
(select)	SEAFDEC/SEC	(select)	(select)	128,934.01
(select)	SEAFDEC/TD	(select)	(select)	37,628.31
(select)	SEAFDEC / Sweden	(select)	(select)	115,402.33
(select)	FAO	(select)	(select)	14,514.53
Total Co-financing				7,241,594.66

SEAFDEC 2021 (Q4)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	28,864.00
(select)	SEAFDEC/TD	In-kind	(select)	264,000.00
(select)	SEAFDEC/SEC	In-kind	(select)	71,520.00
(select)	SEAFDEC/TD/FAO	(select)	(select)	1,182.00
(select)	SEAFDEC/JTF	(select)	(select)	392,408.27
(select)	SEAFDEC/SEC	(select)	(select)	2,461.00
(select)	SEAFDEC	(select)	(select)	65,180.06
Total Co-financing				825,615.33

SEAFDEC 2022 (Q1)

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
(select)	Overheads for SEAFDEC/PCU staffs	In-kind	(select)	28,864.00
(select)	SEAFDEC/TD	In-kind	(select)	74,560.00
(select)	SEAFDEC/SEC	In-kind	(select)	28,480.00
(select)	SEAFDEC/JTF	(select)	(select)	12,861.10
(select)	MRC	(select)	(select)	341.33
Total Co-financing				145,106.43

ANNEX 7: ACHIEVEMENTS AS OF 31 OCTOBER 2022: CAMBODIA

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
<p>Objective 1: Identification and management of fisheries and critical habitat linkages at priority fisheries refugia in the South China Sea and Gulf of Thailand</p> <p>Outcomes 1: Reduced stress on fish stocks and coastal habitats via improved national management of key anthropogenic threats to fisheries and critical habitat linkages in the South China Sea and Gulf of Thailand</p>	Status of formal designation, management plan adoption, and community engagement in implementation of agreed management measures, including enforcement, for priority sites	<p>Adopted management plans</p> <p>Regular reports of meetings of national and regional project management bodies.</p> <p>Reports of independent mid-term and terminal project evaluations</p>	5-year management plan for marine fisheries management area and blue swimming crab refugia in Kep province adopted by Provincial Governor and Director General of FiA since 2019.		
Act.1.1: Developing fisheries and coastal habitat information and data collection programmes	Status of boundary delineation and agreement on proposed management interventions	Fisheries <i>refugia</i> profile reports, including maps and site characterisations, published for priority sites	Three fisheries refugia profiles including map in Kep, Kampot, and Koh Kong provinces were done and published (Ref: Report No. REP2020 Q3_073; REP2020Q3_077; and REP2021Q2_SP02)	100	
Act.1.2: Facilitating agreement among stakeholders on the boundaries of fisheries refugia	Status of adoption and implementation of the management plans. Total area of fisheries <i>refugia</i> (ha) under management	Published management plans and numbers of implementation reports	Management plans for fisheries refugia in Kep and Koh Kong provinces were prepared with participation from provincial management committee and technical working group. 7 meeting reports were done and published (Ref: Report No. REP2019 Q2-037, REP2019 Q2-041, REP2019Q2-049, REP2019Q3-	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
			053, REP2020Q1-060, REP2020Q2-063, and REPQ4-080		
Act.1.3: Developing Community-Based Management Plans	Status and effectiveness of the management board and volunteer networks	224 quarterly reports of network meetings and activities [including list of participants and results of work]	14 stakeholder consultation meetings were held to support the development of management plan for fisheries refugia in Kep and Koh Kong provinces (Ref: Report No. CAM-REP2022Q3-104, CAM-REP2021Q4-093, CAM-REP2020Q4-080, CAM-REP2020Q3-074, CAM-REP2020Q1-064, CAM-REP2020Q1-053, CAM-REP2019Q3-049, CAM-REP2019Q2-041, CAM-REP2019Q2-040, CAM-REP2019Q2-037, and CAM-REP2019Q1-025	100	
Act.1.4: Establishing operational management	Increase in the proportion of target community members [minimum of 30 percent women] participating in <i>refugia</i> management, including enforcement, at the site level	Operational enforcement programmes at priority sites	Fisheries refugia in Kep, Koh Kong, and Kampot provinces were practiced fully for operation and management program (Ref: Report No. CAM-REP2020Q4-082, CAM-REP2020Q4-079, CAM-REP2020Q3-072, CAM-REP2021Q2-086, CAM-REP2022Q3-103, CAM-REP2022Q1-096, and CAM-REP2022Q1-095	100	
Act.1.5: Strengthening civil society and community organization participation in the management of 14 fisheries refugia sites	Number of GEF Small Grants Programme projects commissioned and implemented in support of <i>refugia</i>	Reports of <i>Refugia</i> -SGP partnership	Fisheries refugia project in Cambodia is closely working with MCC, WEA, FFI, IUCN, FACT, and CFIs to ensure effective fisheries refugia and habitat management, focusing on:	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
	management objectives		<ol style="list-style-type: none"> 1) Deploying concrete blocks to prevent illegal fishing, to protect and improve marine habitat as well as fish larvae stages and endangered animal species 2) Raising public awareness to the stakeholders and communities at all levels to understand the fisheries refugia approach and their roles for sustainable management of fisheries at the site level. 3) Providing materials and equipment (lifejacket, GPS and boats) to community fisheries for patrolling at refugia site. 		
<p>Objective 2: Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-base for fisheries <i>refugia</i> management in the South China Sea and Gulf of Thailand</p> <p>Outcomes 2: Increased institutional capacity in the 6 participating countries for the designation and operational management of fisheries refugia via the transformation of enabling</p>	Status of enabling environment reform, including extent of behavioural change among small-scale fisherfolk at priority sites. Extent of use of available environmental state and socio-cultural information in policy and planning frameworks.	<p>Endorsed polices and plans.</p> <p>Regular reports of meetings of national and regional project management bodies.</p> <p>Reports of independent mid-term and terminal project evaluations.</p>	<p>Fisheries refugia in Kep, Koh Kong, and Preah Sihanouk provinces were endorsed by the Royal Government of Cambodia, but fisheries refugia in Kampot province is not adopted yet (it is expected to adopt in December of this year.</p> <p>Dissemination meeting reports of MAFF's proclamation on establishment of management area of fisheries refugia in Kep and Koh Kong provinces (Ref: Report No. CAM-REP2019Q1-032 and CAM-REP2020Q1-063)</p>		<p>Wait for being amended law on fisheries to expect to be adopted this year</p> <p>Fisheries refugia in Kampot province will be adopted this year</p>

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
environments and the generation of knowledge for planning					
Act.2.1: Enhancing policy guidance for improved management of the effects of fishing on critical habitats	Status of policy revision and endorsement	1 endorsed revised policies	Fisheries Refugia Concept has been already integrated into amended law on fisheries	100	Wait for being amended law on fisheries to expect to be adopted this year
Act.2.2: Development of national guidelines on the establishment and operation of fisheries refugia and reflected in an updated regional refugia action plan	Status of endorsement of national guidelines	1 published national guidelines on establishing and operating fisheries <i>refugia</i>	National guideline on fisheries refugia has been finalized with the National Consultation.	98	Speed up with national consultant to complete it in December 2022
Act.2.3: Reforming national and regional policy, legal and planning frameworks for demarcating boundaries and managing refugia	Status of endorsement of national fisheries <i>refugia</i> policies, enactment of supporting laws, and plan implementation	Endorsed policy and executive orders, provincial/local ordinances and by-laws 1 endorsed National Action Plans for the management of priority fisheries <i>refugia</i> and associated biodiversity	Fisheries refugia in Kep, Koh Kong, and Preah Sihanouk provinces were endorsed by the Royal Government of Cambodia, but fisheries refugia in Kampot province is not adopted yet (it is expected to adopt in December of this year. National action plan for fisheries refugia has been finalized with nation consultant and being expected to complete in December 2022	95	Finalizing the new boundary of MFMA including fisheries refugia in Kampot province with provincial governor and it will be expected to adopt in

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
					December 2022
Act.2.4: Enhancing access to information relating to status and trends in fish stocks and their habitats in waters of the SCS marine basin	Volume of new and additional information compiled on biomass trends; recruitment; fish size; fish habitat area and quality; and volume and value of landings by fishing area and fishing gear use	Quarterly and annual reports on fish stocks and habitats published online	Reports on fish stock and habitats in Kampot, Kep. and Koh Kong province were published by online (Ref: Report No. CAM-REP2021Q2-SP03, CAM-REP2021Q2-SP02, and CAM-REP2021Q2-SP01)	100	
Act.2.5: Improved national and regional-level management and sharing of information and data on fish early life history	Status of national and regional databases and the number of datasets contained therein	1 database online and populated with datasets	The reports of data analysis of fish larvae were published (Ref: Report No. CAM-REP2020Q1-066 and CAM-REP2020Q3-076)	100	
Act.2.6: Enhancing access to information relating to the locations and status of coastal habitats and management areas	Status of the national and regional GIS and the number of sites presented and characterised	1 national Geographical Information System online and populated with site-based information	National Geographical Information and System and site base information were published by Google Earth (Ref: SEAFDEC/UNEP/GEF/FR-RSTC.7)	100	
Act.2.7: Strengthening the information base for the planning, monitoring and evaluation of management at priority fisheries refugia sites	Completeness of site characterisations for 14 priority <i>refugia</i>	Characterisations for <i>refugia</i> sites accessible online	Characterizations for refugia sites in Cambodia can be accessible by online through the regional website link: https://fisheries-refugia.org/cambodia-activities-report/91-refugia-country-activities	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
<p>Objective 3: Information Management and Dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea and Gulf of Thailand</p> <p>Outcomes 3: Strengthened knowledge management and information sharing and access for enhanced uptake of good practice in integrating fisheries management and biodiversity conservation in the design and implementation of fisheries and environmental management systems, including Marine Spatial Planning</p>	Extent of demonstrable use of examples of good practice in guiding the replication, scaling-up and mainstreaming of good practices	Routine communications on progress and lessons learned prepared and shared Annual results reports published and disseminated National and regional web portals for knowledge management and information exchange accessible online	<p>Communication on progress and lesson learned of the establishment and management of fisheries refugia in Cambodia was prepared and shared at regional, national, and provincial level (Ref: CAM-REP2022Q3-105, CAM-REP2022Q3-104, CAM-REP2022Q2-100 CAM-REP2021Q3-090, CAM-REP2020Q4-080, CAM-REP2019 Q2-043, CAM-REP2020Q1-062, CAM-REP2019Q2-039.</p> <p>These reports were published by online through the regional website link: https://fisheries-refugia.org/cambodia-activities-report/91-refugia-country-activities</p>		
Act.3.1: Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation	<p>Number of best practice approaches and measures tested and codified</p> <p>Number, scope and reach of communications to share best practices</p>	<p>1 online national catalogue of best practice approaches and measures</p> <p>4 communications on best practices published and syndicated</p>	<p>Marine Fisheries Management Area and fisheries refugia in Kep, Koh Kong, and Preah Sihanouk, and Kampot provinces were best practicing approaches and measure in integrating fisheries management and biodiversity conservation and were published by online through the regional web link: https://fisheries-refugia.org/cambodia-activities-report/91-refugia-country-activities</p>	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
	Demonstrable use of best practices in policy and planning				
Act.3.2: Improving community acceptance of area-based approaches to marine management	Extent of community acceptance of the use of fisheries <i>refugia</i> in coastal fisheries management	At least 4 awareness materials published online At least 4 reports of outreach programmes at each priority <i>refugia</i> locations, including tracking of extent of community acceptance	1- Report of World Ocean Day in Koh Sdach, Koh Kong province (Ref: Report No. CAM-REP2020Q2-071) 2- Dissemination of MAFF's proclamation on creation of mackerel fisheries <i>refugia</i> at Peam Krasob, Koh Kong province (Ref: Report No. CAM-REP2020Q1-063) 3- Dissemination on Proclamation of Marine Fisheries Management Area at Koh Po and Koh Tonsay, Kep province (Ref: Report No. CAM-REP2019Q1-032) 4- Dissemination on the Importance of Short Mackerel Fisheries <i>Refugia</i> in Koh Kong province ((Ref: Report No. CAM-REP2019Q1-031) 5- Report of Meeting on Preparation for Dissemination on Action Plan and Training on the Importance of Short Mackerel Fisheries <i>Refugia</i> (Ref: Report No. CAM-REP2019 Q1-027	100	
Act.3.3: Knowledge generated and experiences from establishing and operating	Status of national web portals	1 online national web portals on fisheries <i>refugia</i>	The information of fisheries <i>refugia</i> in Cambodia were published by online through the regional website link:	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
fisheries refugia captured and shared nationally, regionally, and globally	Status of publication of GEF IW experience notes	1 published GEF IW experience notes on application of fisheries <i>refugia</i> in the South China Sea and Gulf of Thailand	https://fisheries-refugia.org/cambodia-activities-report/91-refugia-country-activities		
<p>Objective 4: National and regional cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea and Gulf of Thailand</p> <p>Outcomes 4 Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management</p>	Extent and continuity of stakeholder participation in meetings of project management bodies, including the scope and uptake of joint management and planning decisions	Regular reports of meetings of national and regional project management bodies	14 Meeting reports of NFRC, NSTC, and Site Base Management Board were made regularly (Ref: Report No. CAM-REP2022Q2-101, CAM-REP2022Q2-100, CAM-REP2021Q4-093, CAM-REP2021Q4-092, CAM-REP2021Q3-088, CAM-REP2020Q3-074, CAM-REP2020Q1-068, CAM-REP2021Q1-064, CAM-REP2019Q3-053, CAM-REP2019Q3-049, CAM-REP2019Q3-048, CAM-REP2019Q2-043, CAM-REP2019Q2-037, and CAM-REP2019Q1-025)		
Act.4.1: Strengthened cross-sectoral coordination in the establishment and operation of fisheries refugia in the participating countries	Extent and continuity of national government agency participation in National Fisheries <i>Refugia</i> Committee meetings	1 NFRC Terms of Reference and Numbers of meeting reports (joint management decisions and participant lists)	Meeting report was made regularly (Ref: Report No. CAM-REP2019Q3-048)	100	
Act.4.2: Harnessing national scientific and technical expertise and knowledge to inform policy,	Status of the NTSC's and the uptake of the scientific and	1 NTSC Terms of Reference and 96 quarterly meeting	Meeting report of NSTC were made regularly (Ref: Report No. CAM-	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
legal and institutional reforms for fisheries refugia	technical advice they provide	reports (scientific and technical advice and participants lists)	REP2019Q3-049 and CAM-REP2019Q3-049)		
Act.4.3: Catalyzing local community action via establishment and operation of site-based management boards at priority refugia sites	Continuity of participation of community stakeholders in the planning, monitoring and evaluation of fisheries <i>refugia</i> management	Management Board Terms of Reference Quarterly meeting reports (joint management decisions and participant lists)	Meeting reports of site base management boards were made regularly (Ref: Report No. CAM-REP2022Q2-101, CAM-REP2022Q2-100, CAM-REP2021Q4-093, CAM-REP2021Q4-092, CAM-REP2021Q3-088, CAM-REP2020Q3-074, CAM-REP2020Q1-068, CAM-REP2021Q1-064, CAM-REP2019Q3-053, CAM-REP2019Q2-037, and CAM-REP2019Q1-025,	100	.

ANNEX 8: ACHIEVEMENTS AS OF 22 DECEMBER 2022: INDONESIA

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
<p>Objective 1: Identification and management of fisheries and critical habitat linkages at priority fisheries refugia in the South China Sea and Gulf of Thailand</p> <p>Outcomes 1: Reduced stress on fish stocks and coastal habitats via improved national management of key anthropogenic threats to fisheries and critical habitat linkages in the South China Sea and Gulf of Thailand</p>	Status of formal designation, management plan adoption, and community engagement in implementation of agreed management measures, including enforcement, for priority sites	<p>Adopted management plans</p> <p>Regular reports of meetings of national and regional project management bodies.</p> <p>Reports of independent mid-term and terminal project evaluations</p>	The fisheries refugia project for Indonesia was conducted from 2019 by targeting two Fisheries Refugia Sites focused on Penaeid shrimps and Squids. Management plan recommendation had been proposed to the national authority (Directorate General for Capture Fisheries and Directorate General for Marine Spatial Planning under MMAF) and local governments (Bangka Belitung Province and West Kalimantan Province) to be used as the basis in adopt Fisheries Refugia concept (Management plan documents see documents No. 37 , 48 , 49 , 50 , 51 , 52 , 53) report of these documents handover to the management authorities (see reports No. 61 , 62 , 63). To increase the management authority acceptance, several technical meeting were conducted by involving national and local authorities (see 13 , 14 , 17 , 19 , 23 , 24 , 38 , 42 , 43 , 57 , 65).		
Act.1.1: Developing fisheries and coastal habitat information and data collection programmes	Status of boundary delineation and agreement on proposed management interventions	Fisheries <i>refugia</i> profile reports, including maps and site characterisations, published for priority sites	Fisheries refugia profile for both sites in Indonesia (see documents No. 37 and 48) already reviewed and finalized. This profile document including comprehensive information such as characteristic of the refugia sites delineated area of the refugia and recommended management measures for both sites.	100%	
Act.1.2: Facilitating agreement among stakeholders on the boundaries of	Status of adoption and implementation of the management	Published management plans and numbers of	The Fisheries Refugia team under the Agency of Marine and Fisheries Research and Human Resources has been produces several policy papers which contained required information	100 %	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
fisheries refugia	plans. Total area of fisheries <i>refugia</i> (ha) under management	implementation reports	<p>to develop management plan based on fisheries refugia concept. The papers are:</p> <ol style="list-style-type: none"> 1) Academic draft for establishing fisheries refugia management plan in West Kalimantan (see No. 51); 2) Academic draft for establishing fisheries refugia management of Bangka Belitung Province (see No. 52); 3) Policy brief of establishing fisheries refugia in West Kalimantan Province (see No. 49); 4) Policy brief of establishing fisheries refugia in Bangka Belitung Province. (see No. 50); <p>These papers will be basis for the national and local authority to develop management plan and regulation regarding fisheries refugia. These documents were delivered to the national authority (see No. 61) and local government on both sites (see No. 62 and 63).</p>		
Act.1.3: Developing Community-Based Management Plans	Status and effectiveness of the management board and volunteer networks	224 quarterly reports of network meetings and activities [including list of participants and results of work]	In order to enhance community and policy maker' acceptance on fisheries management-based fisheries refugia concept, therefore, several meetings that engaged stakeholders have been conducted during the project implementation. The meeting were held to facilitate both scientific network (see 1 , 2 , 3 , 8 , 9 , 10 , 11 , 12) and management authority communications (see 13 , 14 , 17 , 19 , 23 , 24 , 38 , 42 , 43 , 57 , 65)	100 %	
Act.1.4: Establishing operational management	Increase in the proportion of target community members [minimum of 30 percent women] participating in <i>refugia</i>	Operational enforcement programmes at priority sites	Participation of the targeted community members during the process for establishing fisheries refugia based recommendation has been facilitated through socialization meeting (see No. 14 , 65 , 66). The community engagement during the initiation of establishing fisheries refugia system in Indonesia is essential to enhance community acceptances.	100%	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
	management, including enforcement, at the site level				
Act.1.5: Strengthening civil society and community organization participation in the management of 14 fisheries refugia sites	Number of GEF Small Grants Programme projects commissioned and implemented in support of <i>refugia</i> management objectives	Reports of <i>Refugia</i> -SGP partnership	The small grants program project not implemented, however, an effort to strengthen civil society and community organization participation in the management of fisheries refugia has been initiated through community involvement in survey for establishing FR in both sites and meeting (see report No 56). The civil society and community organizations were also involved as respondent in socio-economic studies in both sites (see No. 36 and 40) as well as in capacity building and seminar activities (see No. 14 , 64 , 69).	100 %	
<p>Objective 2: Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-base for fisheries <i>refugia</i> management in the South China Sea and Gulf of Thailand</p> <p>Outcomes 2: Increased institutional capacity in the 6 participating countries for the designation and operational management of fisheries refugia via the transformation of enabling</p>	Status of enabling environment reform, including extent of behavioural change among small-scale fisherfolk at priority sites. Extent of use of available environmental state and socio-cultural information in policy and planning frameworks.	<p>Endorsed policies and plans.</p> <p>Regular reports of meetings of national and regional project management bodies.</p> <p>Reports of independent mid-term and terminal project evaluations.</p>	Fisheries refugia had been endorsed to the fisheries authorities (see reports No. 61 , 62 , 63). The documents delivered to endorse the fisheries refugia-based policy (see 37 , 48 , 49 , 50 , 51 , 52 , 53) will be used to open fisheries policy formulation in the management level.		

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
environments and the generation of knowledge for planning					
Act.2.1: Enhancing policy guidance for improved management of the effects of fishing on critical habitats	Status of policy revision and endorsement	1 endorsed revised policies	An effort to revise the existed fisheries management policy was not possible to be conducted during the project time frame. Nevertheless, a document required to revise a policy and supplement a policy by involving the fisheries refugia concept has been prepared (see No. 37 , 48 , 49 , 50 , 51 , 52 , 53). This fisheries refugia review documents provided several information regarding the regulation of fisheries management and marine spatial management. To strengthened this input, additional document were also prepared to facilitated the review on national and provincial in Fisheries Refugia marine spatial management (see 53)	100%	
Act.2.2: Development of national guidelines on the establishment and operation of fisheries refugia and reflected in an updated regional refugia action plan	Status of endorsement of national guidelines	1 published national guidelines on establishing and operating fisheries <i>refugia</i>	This document is expected to be used as document for supporting fisheries management in Indonesia especially for Fisheries Management Area 771 (see No 47). The national guideline has been prepared by involving authorized agency and expert reviewers (71).	100%	
Act.2.3: Reforming national and regional policy, legal and planning frameworks for demarcating boundaries and managing refugia	Status of endorsement of national fisheries <i>refugia</i> policies, enactment of supporting laws, and plan implementation	Endorsed policy and executive orders, provincial/local ordinances and by-laws 1 endorsed National Action Plans for the	The recommendation documents to endorse policy and executive orders had been delivered through handover meeting (see reports No. 61 , 62 , and 63). The academic draft delivered to the national authorities (No. 51 and 52) included the essential information to be used as the National Action Plan.	100%	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
		management of priority fisheries <i>refugia</i> and associated biodiversity			
Act.2.4: Enhancing access to information relating to status and trends in fish stocks and their habitats in waters of the SCS marine basin	Volume of new and additional information compiled on biomass trends; recruitment; fish size; fish habitat area and quality; and volume and value of landings by fishing area and fishing gear use	Quarterly and annual reports on fish stocks and habitats published online	The information about fish stock and critical habitat were acquired during the survey (see 37 and 48) and several comprehensive studies (see 25 , 26 , 27 , 28 , 29 , 33 , 34 , 39 , 40) have been conducted within two years (2020-2021) regarding population structure, biological aspect and habitat condition of the species target, as well as postharvest industry, oceanography, and socioeconomic condition to provide the condition of the species target and its critical habitat. All those reports were available to be accessed online via https://fisheries-refugia-indonesia.org/index.php/laporan-kegiatan	100%	
Act.2.5: Improved national and regional-level management and sharing of information and data on fish early life history	Status of national and regional databases and the number of datasets contained therein	1 database online and populated with datasets	All data and information resulted from Fisheries Refugia Project activities uploaded on Fisheries Refugia Indonesia official website https://fisheries-refugia-indonesia.org . The website visitors can download the report containing data, information, analysis result through the habitat characteristic menu (54), GIS feature (55), as well as from the data menu available for both fisheries refugia commodities accessible on the data menu through https://fisheries-refugia-indonesia.org/index.php/fisheriesrefugiadata/cumi-cumi for squid and https://fisheries-refugia-indonesia.org/index.php/fisheriesrefugiadata/udang for shrimp	100%	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
Act.2.6: Enhancing access to information relating to the locations and status of coastal habitats and management areas	Status of the national and regional GIS and the number of sites presented and characterised	1 national Geographical Information System online and populated with site-based information	National Geographical Information system has been developed and accessible online via https://fisheries-refugia-indonesia.org/index.php/data (see report No 55)	100%	
Act.2.7: Strengthening the information base for the planning, monitoring and evaluation of management at priority fisheries refugia sites	Completeness of site characterisations for 14 priority refugia	Characterisations for refugia sites accessible online	Characterisations for refugia sites has been upload in FR website accessible via https://fisheries-refugia-indonesia.org/index.php/karakteristik-lokasi (see report No. 54)	100%	
Act.2.9: Regionally and locally appropriate best practices generated to address the effects of trawl and push net fishing on seagrass habitat, and the capture of juveniles, pre-recruits and fish in spawning	Status of demonstration activities Number of best practice fishing methods and practices demonstrated	4 published reports of the results of demonstrations	During the project implementation several best practises were addressed to enhance awareness on the importance of critical habitat. On the community level, it has been demonstrated the use of squid attractors to established more efficient egg-laying habitat for squid (64) and coral transplantation (69) through capacity building activities to encourage local fishermen participation on the squid habitat rehabilitation. On the management board level, to encourage and accelerate the adoption of fisheries refugia in fisheries management policy several reports prepared and published as the basis in developing fisheries refugia policy, i.e. Profile (37,48), Academic draft (51,52), policy brief (49,50), national guidelines (47), and Review (53).	100%	
Objective 3:	Extent of demonstrable use	Routine communications on	Communications on progress and lesson learned on the level of Project committee (see 1, 3, 4, 6, 12, 16, 20, 21, 32,		

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
<p>Information Management and Dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea and Gulf of Thailand</p> <p>Outcomes 3: Strengthened knowledge management and information sharing and access for enhanced uptake of good practice in integrating fisheries management and biodiversity conservation in the design and implementation of fisheries and environmental management systems, including Marine Spatial Planning</p>	<p>of examples of good practice in guiding the replication, scaling-up and mainstreaming of good practices</p>	<p>progress and lessons learned prepared and shared</p> <p>Annual results reports published and disseminated</p> <p>National and regional web portals for knowledge management and information exchange accessible online</p>	<p>(44, 45), scientific boards (see 2, 7, 8, 9, 10, 11, 15, 18, 30, 31, 35, 46) and management/stakeholders board (see 13, 17, 19, 23, 24, 28, 38, 42, 43, 57, 65, 66) regularly conducted. All progress are documented on web portals accessible via https://fisheries-refugia-indonesia.org</p>		
<p>Act.3.1: Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation</p>	<p>Number of best practice approaches and measures tested and codified</p> <p>Number, scope and reach of communications to share best practices</p>	<p>1 online national catalogue of best practice approaches and measures</p> <p>4 communications on best practices published and syndicated</p>	<p>Information regarding best practices had been uploaded and accessible via https://fisheries-refugia-indonesia.org. The most recent activities accessible via home menu, while other information provided on data, characteristic, GIS, and report menu.</p> <p>To deliver information as the best practices, several communication were conducted through seminar (14), capacity building (64, 69), technical meeting (65), and socialization (66).</p>	100%	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
	Demonstrable use of best practices in policy and planning				
Act.3.2: Improving community acceptance of area-based approaches to marine management	Extent of community acceptance of the use of fisheries <i>refugia</i> in coastal fisheries management	At least 4 awareness materials published online At least 4 reports of outreach programmes at each priority <i>refugia</i> locations, including tracking of extent of community acceptance	More than 4 awareness materials to improve community acceptance have been produced and accessible via https://fisheries-refugia-indonesia.org/index.php/awareness (see report 68). These awareness materials were delivered to the community through outreach programs facilitated in stakeholders meeting (see 13, 17, 19, 23, 24, 28, 38, 42, 43, 57, 65, 66), capacity building (14, 64, 69), and via youtube channel https://www.youtube.com/@fisheriesrefugiaindonesia8152 . In addition, outreach program conducted by mass media facilitation was also important to spread the ideas regarding fisheries <i>refugia</i> in national or local community (70)	100%	
Act.3.3: Knowledge generated and experiences from establishing and operating fisheries <i>refugia</i> captured and shared nationally, regionally, and globally	Status of national web portals Status of publication of GEF IW experience notes	1 online national web portals on fisheries <i>refugia</i> 1 published GEF IW experience notes on application of fisheries <i>refugia</i> in the South China Sea and Gulf of Thailand	Indonesia has developed national web portal on Fisheries <i>Refugia</i> accessible via https://fisheries-refugia-indonesia.org (see 22 and 41) The fisheries <i>refugia</i> team has drafted GEF IW experience notes on application of fisheries <i>refugia</i> provided in documents 67.	100 %	
Objective 4: National and regional cooperation and coordination for integrated fish stock and critical habitat management in	Extent and continuity of stakeholder participation in meetings of project management	Regular reports of meetings of national and regional project management bodies	NFRC, NSTC and Management board meeting conducted regularly following the term of reference (see 58, 59, 60).		

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
the South China Sea and Gulf of Thailand Outcomes 4 Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management	bodies, including the scope and uptake of joint management and planning decisions				
Act.4.1: Strengthened cross-sectoral coordination in the establishment and operation of fisheries refugia in the participating countries	Extent and continuity of national government agency participation in National Fisheries <i>Refugia</i> Committee meetings	1 NFRC Terms of Reference and Numbers of meeting reports (joint management decisions and participant lists)	NFRC meeting has been conducted regularly at least once a year (see TOR 58). The meeting facilitated either on the dedicated meeting for NFRC (see 21 , 38 , 45) or facilitated in other activities participated by member of National Fisheries Refugia Committee (see 1 , 5 , 12 , 16).	100 %	
Act.4.2: Harnessing national scientific and technical expertise and knowledge to inform policy, legal and institutional reforms for fisheries refugia	Status of the NTSC's and the uptake of the scientific and technical advice they provide	1 NTSC Terms of Reference and 96 quarterly meeting reports (scientific and technical advice and participants lists)	NSTC meeting has been conducted regularly at least once a year (see TOR 60). The meeting facilitated in several activities (see 15 , 20 , 23 , 32 , 46).	100 %	
Act.4.3: Catalyzing local community action via establishment and operation of site-based management	Continuity of participation of community stakeholders in the planning, monitoring and	Management Board Terms of Reference Quarterly meeting reports (joint management	Management Board meeting has been conducted regularly at least once a year (see TOR 59). Several Management Board meeting (see 42 , 43) and other activities that facilitated communication between Fisheries Refugia committee and provincial governments on both sites (see 13 , 17 , 19 , 23 , 24 , 28 , 38 , 57 , 65 , 66) are conducted.	100 %	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
boards at priority refugia sites	evaluation of fisheries <i>refugia</i> management	decisions and participant lists)			

ANNEX 9: ACHIEVEMENTS AS OF 30 SEPTEMBER 2022: MALAYSIA

Outputs	Expected completion date (Implementation status as of end of reporting period expressed in %	Comments if variance, Describe any problems in delivering outputs
Outputs 1: Adopted management plans			
Activity 1.1: Developing fisheries and coastal habitat information and data collection programs for 14 priority fisheries refugia sites	Q4/2020	100%	<ul style="list-style-type: none"> • All the research and technical data collection has been completed in Q4 2020
Activity 1.2: Facilitating agreement among stakeholders on the boundaries of fisheries refugia at 14 priority fisheries refugia sites	Q4/2021	100%	<ul style="list-style-type: none"> • Consultation sessions for fishermen and stakeholders will be held on an ongoing basis to ensure that the concept of establishing this refugia is understood and accepted. • Social impact study has been conducted at both sites • Malaysia has identified the potential area for refugia sites establishment • Integration of Biological and Socio-economic Data has been carried out during our mini seminar conducted in Apr 2021
Activity 1.3: Developing Community-Based Management Plans for 14 priority fisheries refugia sites	Q4/2022	80%	<ul style="list-style-type: none"> • The Fisheries Department has prepared a preliminary framework for the development of the Management Plan related to the two refugia areas.

			<ul style="list-style-type: none"> A group of experts from the Universities has agreed to work together for the purpose of the formation of the Management Plan which is currently in the stage of discussion and information gathering.
Activity 1.4: Establishing operational management for 14 priority fisheries refugia sites	Q4/2022	100%	<ul style="list-style-type: none"> DOF have already identified effective management measures for refugia areas.
		80%	<ul style="list-style-type: none"> The operational management for both refugia sites has been detailed out in the Management Plan based on biological, sociological findings and consultation sessions.
Activity 1.5: Strengthening civil society and community organization participation in the management of 14 fisheries refugia sites	Q4/2022	80%	<ul style="list-style-type: none"> Management training and Training of trainers (ToT) to staff and stakeholders is a prerequisite for the consultant to form the Management Plan. These Training will schedule to be conducted by the consultants in the second third quarter of 2022.
Output 2: Endorsed policies and plans Regular reports of meetings of national and regional project management bodies Reports of independent mid-term and terminal project evaluations			
Activity 2.1: Enhancing policy guidance for improved management of the effects of fishing on critical habitats in the 6 participating countries	Q3/2022	70%	<ul style="list-style-type: none"> Already endorsed in Refugia National Steering Committee Meeting chaired by DOF DG on 15th August 2022.
Activity 2.2: Defining the policy and legal basis for formal designation and establishment of fisheries refugia in the 6 participating countries	Q2/2022	90%	<ul style="list-style-type: none"> As for the initial management approach, seasonal closure is recommended from

Activity 2.3:	Development of national guidelines on the establishment and operation of fisheries refugia and reflected in an updated regional refugia action plan	Q2/2022	60%	July until Sept for lobster and from Aug until October for tiger prawn species
Activity 2.4:	Reforming national and regional policy, legal and planning frameworks for demarcating boundaries and managing refugia	Q3/2022	80%	
Activity 2.5:	Enhancing access to information relating to status and trends in fish stocks and their habitats in waters of the SCS marine basin	Q4/2020	100%	• Completed
Activity 2.6:	Improved national and regional-level management and sharing of information and data on fish early life history in the waters of the SCS	Q4/2022	70%	• DOF is in the process of upgrading the marine data repository system which includes data on national marine protected areas including refugia. The availability of this system facilitates national and international level reference.
Activity 2.7:	Enhancing access to information relating to the locations and status of coastal habitats and management areas in the SCS	Q4/2022	80%	Two Refugia Gallery has been set up for both sites. Appropriate public awareness materials and upgrading infostructure will be conducted in Q1/Q2/Q3/2021 National online portal for refugia will be included in our national marine data repository system which is currently in the process of upgrading. This data will be made available for public reference once the system is ready
Activity 2.8:	Strengthening the information base for the planning, monitoring and evaluation of management at priority fisheries refugia sites	Q2/2022	80%	National online portal for refugia will be included in our national marine data repository system which is currently in the process of upgrading. This data will be made available for public reference once the system is ready

Output 3: Routine communications on progress and lessons learned prepared and shared Annual results reports published and disseminated National and regional web portals for knowledge management and information exchange accessible online			
Activity 3.1: Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation in the 6 participating countries	Q3/2022	70%	<ul style="list-style-type: none"> • Posters, online campaign awareness and stakeholder engagement has been conducted concurrently with the formation of relevant management plan. • Awareness kit on best practice has been developed to support best practice campaign for Tanjong Leman and Kuala Baram refugia project. • In line with the process of development of project management plan training will be provided for the targeted fish folks in 2022 for both sites.
Activity 3.2: Improving community acceptance of area-based approaches to marine management in the 6 participating countries	Q4/2022	100%	<ul style="list-style-type: none"> • For the year 2022, in line with the formation of the management plan, several consultation sessions has been conducted to provide information and awareness to the target group regarding the establishment of refugia
Activity 3.3: Knowledge generated and experiences from establishing and operating fisheries refugia captured and shared nationally, regionally, and globally	Q4/2022	70%	<ul style="list-style-type: none"> • Publications about the research to support this refugia project are made available via Refugia regional website
Output 4: Regular reports of meetings of national and regional project management bodies Reports of independent mid-term and terminal project evaluations			

Activity 4.1: Strengthened cross-sectoral coordination in the establishment and operation of fisheries refugia in the participating countries	Completed	100%	NFRC has been established
Activity 4.2: Harnessing national scientific and technical expertise and knowledge to inform policy, legal and institutional reforms for fisheries refugia	Completed	100%	NFRC has been established
Activity 4.3: Catalyzing local community action via establishment and operation of site-based management boards at 14 priority refugia sites	Q4/2022	80%	Management training and Training of trainers to staff and stakeholders is a prerequisite for the consultant to form the Management Plan. These Training will schedule to be conducted by the consultants in the second quarter of 2022

ANNEX 10: ACHIEVEMENTS AS OF 30 SEPTEMBER 2022: PHILIPPINES

Outputs	Expected completion date	Implementation status as of end of reporting period expressed in %	Comments if variance, Describe any problems in delivering outputs
Outputs 1: Adopted management plans			
Activity 1.1: Developing fisheries and coastal habitat information and data collection programmes for 14 priority fisheries refugia sites	November 15, 2022	100	<ul style="list-style-type: none"> • Technical data collection for Ichthyoplankton Survey and Fisheries Data Collection in Landing Centers have been completed in Q4 2020 • Fisheries Profile for 2 <i>refugia</i> sites (Bolinao and Masinloc) were validated during the committee meetings conducted in Q2/2021
Activity 1.2: Facilitating agreement among stakeholders on the boundaries of fisheries refugia at 14 priority fisheries refugia sites	November 15, 2022	75	<ul style="list-style-type: none"> • Philippines have already identified possible <i>refugia</i> sites/areas • Final boundary delieneation for approval and appropriate policy recomendation
Activity 1.3: Developing Community-Based Management Plans for 14 priority fisheries refugia sites	November 15, 2022	80	<ul style="list-style-type: none"> • The PMO together with the Project Consultant have prepared a management plan outline for the respective municipalities. • Preparation for the Refugia Management Plan Write-ups by the LGUs are on-going

Activity 1.4: Establishing operational management for 14 priority fisheries refugia sites		100	*Mobility restrictions brought about by the pandemic; gathering for 20-30pax were not allowed
Activity 1.5: Strengthening civil society and community organization participation in the management of 14 fisheries refugia sites		-	*
Output 2: Endorsed policies and plans Regular reports of meetings of national and regional project management bodies Reports of independent mid-term and terminal project evaluations			
Activity 2.1: Enhancing policy guidance for improved management of the effects of fishing on critical habitats in the 6 participating countries	November 15, 2022	50	<ul style="list-style-type: none"> • Draft Policy Report submitted October 24, 2022 via email <ul style="list-style-type: none"> - Guidelines endorsed to BFAR for FOO/appropriate policy tool - Data ready for upload
Activity 2.2: Defining the policy and legal basis for formal designation and establishment of fisheries refugia in the 6 participating countries	November 15, 2022	50	
Activity 2.3: Development of national guidelines on the establishment and operation of fisheries refugia and reflected in an updated regional refugia action plan	November 30, 2022	75	
Activity 2.4: Reforming national and regional policy, legal and planning frameworks for demarcating boundaries and managing refugia	November 30, 2022	60	
Activity 2.5: Enhancing access to information relating to status and trends in fish stocks and their habitats in waters of the SCS marine basin	November 30, 2022	100	Data ready for upload
Activity 2.6: Improved national and regional-level management and sharing of information and data on fish early life history in the waters of the SCS	November 30, 2022	80	- Lacking shapefile for some MPAs in refugia sites
Activity 2.7: Enhancing access to information relating to the locations and status of coastal habitats and management areas in the SCS	November 30, 2022	50	Data ready for upload
Output 3: Routine communications on progress and lessons learned prepared and shared Annual results reports published and disseminated National and regional web portals for knowledge management and information exchange accessible online			

Activity 3.1: Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation in the 6 participating countries	November 15, 2022	80	Communications being finalized
Activity 3.2: Improving community acceptance of area-based approaches to marine management in the 6 participating countries	November 15, 2022	100	Links/copy will be submitted
Activity 3.3: Knowledge generated and experiences from establishing and operating fisheries refugia captured and shared nationally, regionally, and globally	November 30, 2022	50	<ul style="list-style-type: none"> • Lacking: IW Learn
Output 4: Regular reports of meetings of national and regional project management bodies Reports of independent mid-term and terminal project evaluations			
Activity 4.1: Strengthened cross-sectoral coordination in the establishment and operation of fisheries refugia in the participating countries	November 30, 2022	50	<ul style="list-style-type: none"> • Initial Meetings conducted for 2021 • NFRC has been established • Meeting for presentation of technical reports and policy recommendations– September 2022
Activity 4.2: Harnessing national scientific and technical expertise and knowledge to inform policy, legal and institutional reforms for fisheries refugia	November 30, 2022	50	<ul style="list-style-type: none"> • Initial Meetings conducted for 2021 • NSTC has been established. • Meeting for presentation of technical reports – September 2022
Activity 4.3: Catalyzing local community action via establishment and operation of site-based management boards at 14 priority refugia sites	November 30, 2022	80	<ul style="list-style-type: none"> • Site-based meetings on-going

ANNEX 11: ACHIEVEMENTS AS OF 30 DECEMBER 2022: THAILAND

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
<p>Objective 1: Identification and management of fisheries and critical habitat linkages at priority fisheries refugia in the South China Sea and Gulf of Thailand</p> <p>Outcomes 1: Reduced stress on fish stocks and coastal habitats via improved national management of key anthropogenic threats to fisheries and critical habitat linkages in the South China Sea and Gulf of Thailand</p>	Status of formal designation, management plan adoption, and community engagement in implementation of agreed management measures, including enforcement, for priority sites	Adopted management plans	Management planning was already done via the cooperation between DOF and Fisheries <i>Refugia</i> Management Team for each site before considered and improved by National Scientific and Technical Committee. The plans will be reconsidered and adopted by Site-based Fisheries <i>Refugia</i> Management Board and Fisheries <i>Refugia</i> Management Team for each site in Nov 2022 (Ref: Report No 44, 47).		
		Regular reports of meetings of national and regional project management bodies.	Meeting reports of National Fisheries <i>Refugia</i> Committee, National Scientific and Technical Committee, and Site-based Management Board in each fisheries <i>refugia</i> site were regularly submitted (Ref: Report No 7, 9, 11, 12, 17, 18, 19, 20, 21, 22, 23, 32, 33, 34, 36, 37, 38, 41, 42, 46).		
Act.1.1: Developing fisheries and coastal habitat information and data collection programmes	Status of boundary delineation and agreement on proposed management interventions	Fisheries <i>refugia</i> profile reports, including maps and site characterisations, published for priority sites	The 2 fisheries <i>refugia</i> profile reports, including maps and site characterisations for Trat and Surat Thani Sites were published (Ref: Report No 25, 31).	100	
Act.1.2: Facilitating agreement among stakeholders on the boundaries of fisheries refugia	Status of adoption and implementation of the management plans. Total area of	Published management plans and numbers of implementation reports	Management plans were prepared and included in the reports of the Workshop on Fisheries <i>Refugia</i> Operational Management	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
	fisheries <i>refugia</i> (ha) under management		at Trat and Surat Thani Sites (Ref: Report No 44, 47). Implementation report was the activity of fisheries <i>refugia</i> boundary marking at Surat Thani Site (Ref: Report No 45).		
Act.1.3: Developing Community-Based Management Plans	Status and effectiveness of the management board and volunteer networks	Quarterly reports of network meetings and activities [including list of participants and results of work]	13 Network/stakeholder meetings and activities [including list of participants and results of work] to support development of management plan were regularly organized (Ref: Report No 1, 2, 3, 4, 5, 6, 13, 14, 26, 35, 44, 45, 47).	100	
Act.1.4: Establishing operational management	Increase in the proportion of target community members [minimum of 30 percent women] participating in <i>refugia</i> management, including enforcement, at the site level	Operational enforcement programmes at priority sites	There are 2 operational management plans including list of operational management committee at Surat Thani and Trat <i>refugia</i> sites (Ref: Report No 44, 47).	100	
Act.1.5: Strengthening civil society and community organization participation in the management of 14 fisheries <i>refugia</i> sites	Number of GEF Small Grants Programme projects commissioned and implemented in support of <i>refugia</i> management objectives	Reports of <i>Refugia</i> -SGP partnership	Fisheries <i>refugia</i> project in Thailand has fully engaged civil society and community organization by the activities of site-based committee meetings and stakeholder consultations (Ref: Report No 5, 6, 13, 14, 18, 19, 23, 26, 34, 35, 41, 44, 45, 46, 47). There are 2 papers of socioeconomic aspects in Trat and Surat Thani <i>refugia</i> sites published (Ref: Report No 29, 30).	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
			Besides, there was “a training-workshop on socioeconomic study and value chain analysis of fisheries” for personnel involved in the task of socioeconomic of fishers in Thailand (Ref: Report No 24).		
<p>Objective 2: Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-base for fisheries <i>refugia</i> management in the South China Sea and Gulf of Thailand</p> <p>Outcomes 2: Increased institutional capacity in the 6 participating countries for the designation and operational management of fisheries <i>refugia</i> via the transformation of enabling environments and the generation of knowledge for planning</p>	Status of enabling environment reform, including extent of behavioural change among small-scale fisherfolk at priority sites. Extent of use of available environmental state and socio-cultural information in policy and planning frameworks.	Endorsed polices and plans.	Management plans are to be endorsed at the upcoming Site-based Fisheries <i>Refugia</i> Management Board Meetings at Trat and Surat Thani Provinces in November 2022		
		Regular reports of meetings of national and regional project management bodies.	Meeting reports of National Fisheries <i>Refugia</i> Committee, National Scientific and Technical Committee, and Site-based Management Board in each fisheries <i>refugia</i> site were regularly submitted (Ref: Report No 7, 9, 11, 12, 17, 18, 19, 20, 21, 22, 23, 32, 33, 34, 36, 37, 38, 41, 42, 46).		
Act.2.1: Enhancing policy guidance for improved management of the effects of fishing on critical habitats	Status of policy revision and endorsement	1 endorsed revised policies	Endorsed revised policies for fisheries in Thailand which include the Fisheries <i>Refugia</i> Concept were the endorsed “Marine Fisheries Management Plan of Thailand 2020-2022” (Ref: Report No 28, 39).	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
Act.2.2: Development of national guidelines on the establishment and operation of fisheries refugia and reflected in an updated regional refugia action plan	Status of endorsement of national guidelines	1 published national guidelines on establishing and operating fisheries <i>refugia</i>	National guidelines on establishing and operating fisheries <i>refugia</i> will be published by November 2022.	95	
Act.2.3: Reforming national and regional policy, legal and planning frameworks for demarcating boundaries and managing refugia	Status of endorsement of national fisheries <i>refugia</i> policies, enactment of supporting laws, and plan implementation	Endorsed policy and executive orders, provincial/local ordinances and by-laws	There are 2 endorsements of national fisheries <i>refugia</i> policies/executive orders: Notifications of Ministry of Agriculture and Cooperatives for Fisheries <i>Refugia</i> in Trat Province; and Notification of Surat Thani Provincial Fisheries Committee for Fisheries <i>Refugia</i> in Surat Thani Province (Ref: Report No 44, 47).	95	
		1 endorsed National Action Plans for the management of priority fisheries <i>refugia</i> and associated biodiversity	National Action Plans for the management of priority fisheries <i>refugia</i> and associated biodiversity are to be endorsed at upcoming Site-based Fisheries <i>Refugia</i> Management Board Meetings at Trat and Surat Thani Provinces in November 2022		
Act.2.4: Enhancing access to information relating to status and trends in fish stocks and their habitats in waters of the SCS marine basin	Volume of new and additional information compiled on biomass trends; recruitment; fish size; fish habitat area and quality; and volume and value of landings by fishing area and fishing gear use	Quarterly and annual reports on fish stocks and habitats published online	Data set of national fisheries management, fishery biology of significant species in the Gulf of Thailand, fish stocks and habitats, and fisheries statistics of Thailand are published online at the Thailand national web portal URL: https://inter.fisheries.go.th/fishrefugia	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
Act.2.5: Improved national and regional-level management and sharing of information and data on fish early life history	Status of national and regional databases and the number of datasets contained therein	1 databases online and populated with datasets	Database of fisheries <i>refugia</i> in Thailand populated with datasets is created online at https://inter.fisheries.go.th/fishrefugia	100	
Act.2.6: Enhancing access to information relating to the locations and status of coastal habitats and management areas	Status of the national and regional GIS and the number of sites presented and characterised	1 national Geographical Information System online and populated with site-based information	Status of location and management areas of fisheries <i>refugia</i> in Trat and Surat Thani Provinces are presented online in GIS format at the Thailand national web portal URL: https://inter.fisheries.go.th/fishrefugia Site-based information are also provided online (Ref: Report No 25, 27, 29, 30, 31).	100	
Act.2.7: Strengthening the information base for the planning, monitoring and evaluation of management at priority fisheries refugia sites	Completeness of site characterisations for 14 priority <i>refugia</i>	Characterisations for <i>refugia</i> sites accessible online	Characterisations for 2 <i>refugia</i> sites in Thailand can be accessible online at Thailand national web portal URL: https://inter.fisheries.go.th/fishrefugia	100	
Objective 3: Information Management and Dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea and Gulf of Thailand Outcomes 3:	Extent of demonstrable use of examples of good practice in guiding the replication, scaling-up and mainstreaming of good practices	Routine communications on progress and lessons learned prepared and shared Annual results reports published and disseminated	Communications on progress and lessons learned in fisheries <i>refugia</i> including consultation on project implementation are regularly done (Ref: Report No 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 32, 33, 34, 36, 37, 38, 41, 42, 46).		

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
Strengthened knowledge management and information sharing and access for enhanced uptake of good practice in integrating fisheries management and biodiversity conservation in the design and implementation of fisheries and environmental management systems, including Marine Spatial Planning		National and regional web portals for knowledge management and information exchange accessible online	Knowledge management and information exchange are accessible online at Thailand national web portal URL: https://inter.fisheries.go.th/fishrefugia		
Act.3.1: Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation	Number of best practice approaches and measures tested and codified Number, scope and reach of communications to share best practices Demonstrable use of best practices in policy and planning	1 online national catalogue of best practice approaches and measures 4 communications on best practices published and syndicated	1 Dataset of fisheries management for the areas and periods of egg-bearing, spawning, and larval rearing of aquatic animals in some parts of the fishing grounds in the Gulf of Thailand are provided online at https://inter.fisheries.go.th/fishrefugia 4 communications on best practices are included in stakeholder consultation workshops and local community consultation meetings at Trat and Surat Thani Sites (Ref: Report No 5, 6, 26, 35).	100	
Act.3.2: Improving community acceptance of area-based approaches to marine management	Extent of community acceptance of the use of fisheries <i>refugia</i> in coastal fisheries management	At least 4 awareness materials published online	4 awareness materials for fisheries <i>refugia</i> were published online in Thailand national web portal on fisheries <i>refugia</i> URL: https://inter.fisheries.go.th/fishrefugia	100	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
		At least 4 reports of outreach programmes at each priority refugia locations, including tracking of extent of community acceptance	1. Report of the training-workshop on socio-economic study and value chain analysis of fisheries (Ref: Report No 24) 2. Report of the training-workshop on the introduction of Ecopath with Ecosim Program for the assessment and management of fisheries resources (Ref: Report No 40) 3. Report of the training-workshop on diving for coastal resources survey (Ref: Report No 43) 4. Report of the workshop on fisheries <i>refugia</i> boundary marking at Surat Thani Site (Ref: Report No 45)		
Act.3.3: Knowledge generated and experiences from establishing and operating fisheries refugia captured and shared nationally, regionally, and globally	Status of national web portals Status of publication of GEF IW experience notes	1 online national web portals on fisheries <i>refugia</i> 1 published GEF IW experience notes on application of fisheries <i>refugia</i> in the South China Sea and Gulf of Thailand	1 online Thailand national web portal on fisheries <i>refugia</i> were created as the URL: https://inter.fisheries.go.th/fishrefugia Done	100	
Objective 4: National and regional cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea and Gulf of Thailand	Extent and continuity of stakeholder participation in meetings of project management bodies, including the scope	Regular reports of meetings of national and regional project management bodies	Meeting reports of National Fisheries <i>Refugia</i> Committee, National Scientific and Technical Committee, and Site-based Management Board in each fisheries <i>refugia</i> site were regularly submitted (Ref:		

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
Outcomes 4 Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management	and uptake of joint management and planning decisions		Report No 7, 9, 11, 12, 17, 18, 19, 20, 21, 22, 23, 32, 33, 34, 36, 37, 38, 41, 42, 46).		
Act.4.1: Strengthened cross-sectoral coordination in the establishment and operation of fisheries refugia in the participating countries	Extent and continuity of national government agency participation in National Fisheries <i>Refugia</i> Committee meetings	1 NFRC Terms of Reference and Numbers of meeting reports (joint management decisions and participant lists)	NFRC Terms of Reference was done (Ref: Notification of the Department of Fisheries No. 459/2564 (2021) Re: Appointment of Thailand's National Fishereris <i>Refugia</i> Committee). There were 9 NFRD meetings organized (Ref: Report No 7, 9, 12, 17, 20, 21, 33, 36, 42).	95	
Act.4.2: Harnessing national scientific and technical expertise and knowledge to inform policy, legal and institutional reforms for fisheries refugia	Status of the NTSC's and the uptake of the scientific and technical advice they provide	1 NTSC Terms of Reference and 96 quarterly meeting reports (scientific and technical advice and participants lists)	NTSC Terms of Reference was done (Ref: Notification of the Department of Fisheries No. 460/2564 (2021) Re: Appointment of Thailand's National Scientific and Technical Committee). There were 7 NFRD meetings organized (Ref: Report No 7, 22, 32, 37, 38, 49 (in preparing))	100	
Act.4.3: Catalyzing local community action via establishment and operation of site-based management boards at priority refugia sites	Continuity of participation of community stakeholders in the planning, monitoring and evaluation of	Management Board Terms of Reference Quarterly meeting reports (joint	Site-based management board Terms of Reference was done (Ref: Notification of Trat Province No. 808/2564 (2021) Re: Appointment of Site-based Fisheries <i>Refugia</i> Management Board in Trat Province; and Notification of Surat Thani	95	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
	fisheries <i>refugia</i> management	management decisions and participant lists)	Province No. 2932/2564 (2021) Re: Appointment of Site-based Fisheries <i>Refugia</i> Management Board in Surat Thani Province). There were 6 Site-based management board meetings organized (Ref: Report No 18, 19, 23, 34, 41, 46).		

ANNEX 12: ACHIEVEMENTS AS OF 31 OCTOBER 2022: REGIONAL PROGRAM

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
<p>Objective 2: Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge-base for fisheries <i>refugia</i> management in the South China Sea and Gulf of Thailand</p> <p>Outcomes 2: Increased institutional capacity in the 6 participating countries for the designation and operational management of fisheries refugia via the transformation of enabling environments and the generation of knowledge for planning</p>	Status of enabling environment reform, including extent of behavioural change among small-scale fisherfolk at priority sites. Extent of use of available environmental state and socio-cultural information in policy and planning frameworks.	<p>Endorsed policies and plans.</p> <p>Regular reports of meetings of national and regional project management bodies.</p> <p>Reports of independent mid-term and terminal project evaluations.</p>	Will be summarized in the new template of overall progress covering national and regional levels.		
Act.2.8: Improving basin-wide understanding of linkages between ocean circulation patterns, nutrient/chlorophyll concentrations, and sources and sinks of fish larvae	Status of modelling system and extent of its use in decision-making and planning	1 regional modelling system online	This task was cancelled at PSC2. However, the Regional modelling system used are shared by the existing system developed by IOC/WESTPAC programs.	100	Ocean circulation patterns study has been worked for many decades by the IOC/WESTPAC under the UNESCO programs. Recently, they developed the application tools on regional modelling

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
					system online. The project decided to use the existing online system in supporting and identifying refugia sites.
Act.2.9: Regionally and locally appropriate best practices generated to address the effects of trawl and push net fishing on seagrass habitat, and the capture of juveniles, pre-recruits and fish in spawning	<p>Status of demonstration activities</p> <p>Number of best practice fishing methods and practices demonstrated</p>	4 published reports of the results of demonstrations	<p>Two main outputs are ongoing developed by PCU as follows:</p> <p>1) Frameworks on Improving Healthy Ocean Ecosystems through Best Practices and Fishing Gear Innovations This publication is developed based on the regional consultation agreement at the RSTC3.</p> <p>2) Regional catalogues of good practices on integrated management between fisheries resources and habitat linkages This publication is in progress, it is expected to be completed by December 2022. This publication will be shared to the SCS/SAP Implementation project.</p>	85	
Objective 3: Information Management and Dissemination in support of national and regional-level implementation of the fisheries <i>refugia</i> concept in the South China Sea and Gulf of Thailand	Extent of demonstrable use of examples of good practice in guiding the replication, scaling-up and mainstreaming of good practices	Routine communications on progress and lessons learned prepared and shared Annual results reports published and disseminated	Will be summarized in the new template of overall progress covering national and regional levels.		

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
Outcomes 3: Strengthened knowledge management and information sharing and access for enhanced uptake of good practice in integrating fisheries management and biodiversity conservation in the design and implementation of fisheries and environmental management systems, including Marine Spatial Planning		National and regional web portals for knowledge management and information exchange accessible online			
Act.3.4: Information and Education Campaigns for small-scale fisherfolk on the links between fisheries, habitats and biodiversity coordinated regionally through a Regional Education and Awareness Centre	Status of the Regional Education and Awareness Centre at SEAFDEC Volume of information and education material compiled, produced and made accessible	Information and education materials accessible at SEAFDEC and online	The PCU acknowledges SEAFDEC as long terms on information and education centre for sustainable fisheries in the Southeast Asian region. PCU also applied the existing Repository system to enhance and disseminate all information and awareness materials regionally.	85%	
Act.3.5: Standardised methods for collection and analysis of information and data for use in assessing impacts of refugia and design appropriate indicators for the longer-term operation of the regional system of fisheries refugia	Status of regional agreements Extent of demonstrated use of the agreed procedures in operation of site-level information and data collection programmes	1 regionally endorsed report published online	The PCU in cooperation with fisheries experts from six country partners developed the Regional Guidelines on Indicators for sustainable management of fisheries refugia. The paper later was endorsed at the PSC7 in May 2022.	100%	

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
<p>Objective 4: National and regional cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea and Gulf of Thailand</p> <p>Outcomes 4 Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management</p>	Extent and continuity of stakeholder participation in meetings of project management bodies, including the scope and uptake of joint management and planning decisions	<p>Regular reports of meetings of national and regional project management bodies</p> <p>Reports of independent mid-term and terminal project evaluations</p>	Will be summarized in the new template of overall progress covering national and regional levels.		
Act.4.4: Regional cooperation in the integration of scientific knowledge and research outputs with management and policy making	<p>Status of the RSTC and the uptake of the scientific and technical advice it provides</p> <p>Continuity of participation of members in annual meetings</p>	1 RSTC Terms of Reference and 4 annual meeting reports (documenting scientific and technical advice and participant lists)	<ul style="list-style-type: none"> ❖ RSTC TORs adopted and published online ❖ 6 RSTC reports published online ❖ RSTC7 is ongoing, expects to complete by end of November 2022. 	100%	
Act.4.5: Regional cooperation in the establishment and operation of a regional system of fisheries refugia	<p>Status of the PSC</p> <p>Continuity of participation of members in annual meetings</p>	1 PSC Terms of Reference and 8 annual meeting reports (documenting joint decisions and participant lists)	<ul style="list-style-type: none"> ❖ PSC TORs adopted and published online ❖ 7 PSC reports published online ❖ PSC8 is scheduled on December 2022 	100%	PSC8 may includes the Project Closing meeting or symposium to disseminate the project outputs and lessons learned. However, the PCU need to get final

Objectives / Outcomes / Activities	Indicators	Means of Verification	Progress and outputs	% Progress	Problem/ How to solve?
					decision from SEAFDEC and UNEP.
Act.4.6: Effective coordination of regional and national-level activities and reporting requirements of UNEP and GEF satisfied	Program coordination unit recruited, and staff retained	Terms of Reference and contracts for project coordination unit staff	<ul style="list-style-type: none"> ❖ Project Coordination Unit established, ❖ TORs adopted and published online 	100%	

ANNEX 13: PROGRESS ON ESTABLISHMENT OF FISHERIES REFUGIA

I. INTRODUCTION

The South China Sea and the Gulf of Thailand is a global center of shallow-water marine biological diversity that supports significant fisheries that are important to the food security and export income of Southeast Asian countries. These fisheries are characterized by high levels of fishing effort from the small-scale sector. Accordingly, all inshore waters of those areas are subject to intense fishing pressure. This high small-scale fishing pressure and declining fisheries resources have contributed to unsustainable fishing methods to maintain catch and increase incomes in the short term. These include using destructive fishing gear and practices, such as operating demersal trawls and push nets in seagrass areas, detonating explosives, and releasing fish poisons in coral reef areas. Therefore, small-scale inshore fishing pressure has been identified as a significant cause of the South China Sea's degradation and loss of coastal habitats.

Although action aimed at reducing the rate of loss of coastal habitats has been implemented by countries bordering the South China Sea and the Gulf of Thailand, the decadal rate of loss of such habitats remains high due to many reasons from not only fishing activities but including other human activities and climate changes. This continued decline in the total area of habitats critical to the life cycles of most aquatic species, combined with the high levels of coastal community dependence on fish, has raised serious concerns for the long-term sustainability of small-scale fisheries in the region. With fish production intrinsically linked to the quality and area of habitats and the heightened dependence of coastal communities on fish, a need exists to improve the integration of fish habitat considerations and fisheries management in the region. This project entitled "Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and the Gulf of Thailand" was developed to meet this need via the fisheries component of the Strategic Action Program for the South China Sea. Executed regionally by the Southeast Asian Fisheries Development Center (SEAFDEC) in partnership with the government agencies responsible for fisheries in the six participating countries, namely Cambodia, Indonesia, Malaysia, Philippines, Thailand, and Viet Nam, the project is comprised of the following four project components:

Component 1 will establish operational management at 15 priority fisheries refugia, with community-based refugia management plans being key outputs.

Component 2 focuses on strengthening the enabling environment for refugia's formal designation and operational management.

Component 3 focuses on strengthening information management and dissemination aimed at enhancing the national uptake of best practices in integrating fisheries management and biodiversity conservation, and in improving community acceptance of area-based approaches to fisheries and coastal environmental management; and

Component 4 will strengthen cross-sectorial coordination for integrated fisheries and environmental management and harness the national scientific and technical expertise and knowledge required to inform the policy, legal and institutional reforms for fisheries refugia management in the

The main focus of the paper is on Component 1: establishing a 15 regional system of fisheries refugia, which are fisheries management areas, in the South China Sea and Gulf of Thailand. Taking into accounts, the integration of habitat and biodiversity conservation into fishery management and practices in the South China Sea and the Gulf of Thailand has been improved through the efforts of concerned communities and governments. Initially planned for 48 months from January 2017 until December 2020, the Project duration was extended until December 2022 due to the COVID-19 pandemic. Nevertheless, as of October 2022, the communities in the fisheries refugia sites of the participating countries have been working towards enhancing the integration of habitat and biodiversity conservation into fishery management and practices for the economically important aquatic species. Table 1 shows the list of 15 Fisheries Refugia. The distribution and location of 15 refugia sites are mapped in Figure 1. The results indicate the effective management of critical threats to 15 fisheries refugia sites of about 1,159,241 ha is expected to be adopted by 2022. It is about 4.3 folds higher than the proposed refugia areas (269,500 ha) adopted by the GEF/CEO.

Among these, five fisheries refugia were agreed upon among stakeholders and approved by the governments, including three in Cambodia at Kep Province for blue swimming crab (Fig. 2), Preah Sihanouk for blood cockle (Fig. 3), and Koh Kong Province for Indo-pacific mackerel (Fig. 4), and two in Thailand at Surat Thani for blue swimming crab (Fig.5), and at Trat Province for Indo-pacific mackerel (Fig. 6). In addition, eight fisheries refugia sites were recognized by the stakeholders and will be adopted by the responsible agencies. These include one in Cambodia at Kampot Province for the juvenile grouper (Fig. 7); two in Malaysia at Tanjung Leman, Johor State for spiny lobster (Fig. 8) and at Kuala Baram, Miri, Sarawak State for black tiger prawn (Fig. 9); three in the Philippines at Bolinao for siganids (Fig. 10), at Masinloc for one-stripe fusilier (Fig. 11), and Coron for redbelly yellowtail fusilier (Fig. 12); and two in Indonesia at West Kalimantan for white prawn (Fig. 13), and at Bangka Regency for squid (Fig. 14). Moreover, due to delayed initiatives, Viet Nam could identify two refugia sites: one at the Eastern coastal area of Phu Quoc – Kien Giang for blue swimming crab (Fig. 15), and another at the coastal area of Lagi, Binh Thuan for the *Subcrenata* ark clam (Fig. 16).

Table 1: 15 Fisheries refugia sites identified by six countries in the South China sea and Gulf of Thailand (as of 30 Sep. 2022)

No. in map	Fisheries <i>refugia</i> Site	Target Species	Area (ha)	Fishing Closure Period	Status	Habitat Linkages
1	Marine Fisheries Management including Refugia at Koh Po & Koh Tonsay Archipelago, Kep, Cambodia	Blue swimming crab (<i>Portunus pelagicus</i>)	11,307 (417ha FR)	May-Jul (3 months)	Approved (12-04-2018)	CR-52ha SG-755ha
2	Prek Thnaot, Kampot, Cambodia	Groupers	8,008 (332ha FR)	Sep-Nov. (3 months)	Final process	CR-347ha SG-269ha
3	Prek Sangke, Village, Tek Thlar Commune, Prey Nub District, Preah Sihanouk, Cambodia	Blood Cockle (<i>Anadam granosa</i>)	116	Jun-Oct (5 months)	Approved (20-08-2020)	NA
4	Peam Krasob, Koh Kong, Cambodia	Indo-pacific mackerel (<i>Rastrelliger brachysoma</i>)	1,283	Dec-Mar (3 months)	Approved (16-09-2019)	CR-NA SG-NA
5	Off Trat, Thailand	Indo-pacific mackerel (<i>Rastrelliger brachysoma</i>)	154,600	Jan-Feb (2 months)	Approved (26-05-2022)	CR-2814ha SG-1016ha MG-9553ha
6	Eastern coastal area of Phu Quoc – Kien Giang, Viet Nam	Blue swimming crab (<i>Portunus pelagicus</i>)	32,860		Ongoing	
7	Around Koh Sed, Surat Thani, Thailand	Blue swimming crab (<i>Portunus pelagicus</i>)	900	Whole Year	Approved (08-03-2022)	SG-8.13ha MG-2.94ha
8	Tanjung Leman, Johor, Malaysia	Spiny lobster (<i>Panulirus polyphagus</i>)	171,549	Dec-Feb (3 months)	Final process	SG-706ha
9	Bangka Belitung Province/ Bangka District, Indonesia	Squid (<i>Uroteuthis chinensis</i>)	239,302.75		Ongoing*	CR-579ha MG-13,372ha
	I. Nurseries & egg laying ground			Apr-May (2 months)	(*Has been proposed and being discussed further in the provincial and national levels for designation and implementation)	
	1) Gugus Karang Jagur		1,790.1			
	2) Gugus Karang Mejan		713.43			
	3) Coastal Riau Silip-Sungailiat		4,187.85			
	4) Coastal Tuing-Riau Silip (KKDP TWP Tuing)		610.67			
	5) Coastal Belinyu		2,279.22			
	SUBTOTAL		9,581.28			
	II. Spawning refugia			Oct-Nov. (2 months)		
	1) Gugus Karang Jagur		78,352.69			
	2) Northern Tuing		69,734.39			
	3) Gugus Karang Sembilan		48,205.32			
	4) Pulau dua		33,429.08			
	SUBTOTAL		229,721.48			
10	West Kalimantan Province/ Kubu Raya District, Teluk Batang District, and Katapang District, Indonesia	Penaeid shrimp (<i>Penaeus merguensis</i>)	409,432	Nov.-Dec. (2 months)	Ongoing*	MG-3,075ha
11	Kuala Baram, Miri, Sarawak, Malaysia	Black tiger prawn (<i>Penaeus monodon</i>)	55,600	Aug-Oct (3 months) Feb-Apr (catch/release)	Final process	Miri-Sibuti CR National Park: 186,930ha
12	Off Coron Islands, Palawan, Philippines	Redbelly yellowtail fusilier	163.2	Closure Period	Final process	CR-1151 ha MG-229.6 ha SG-225.78 ha
13	Masinloc coastal area, Zambales, Philippines	One-stripe fusilier	120.69	Closure Period	Final process	CR-1602.2 ha

					MG- 99.8 ha SG-1182.2 ha
14	Bolinao coastal area, Pangasinan, Philippines	Siganids	99.84	Closure Period Final process	CR-2518 ha MG-15.56 ha SG-1084.6 ha
15	Coastal area of Lagi – Binh Thuan, Viet Nam	Subcrenata ark clam (<i>Anadara subcrenata</i>)	73,900	Ongoing	
TOTAL AREA			1,159,241		

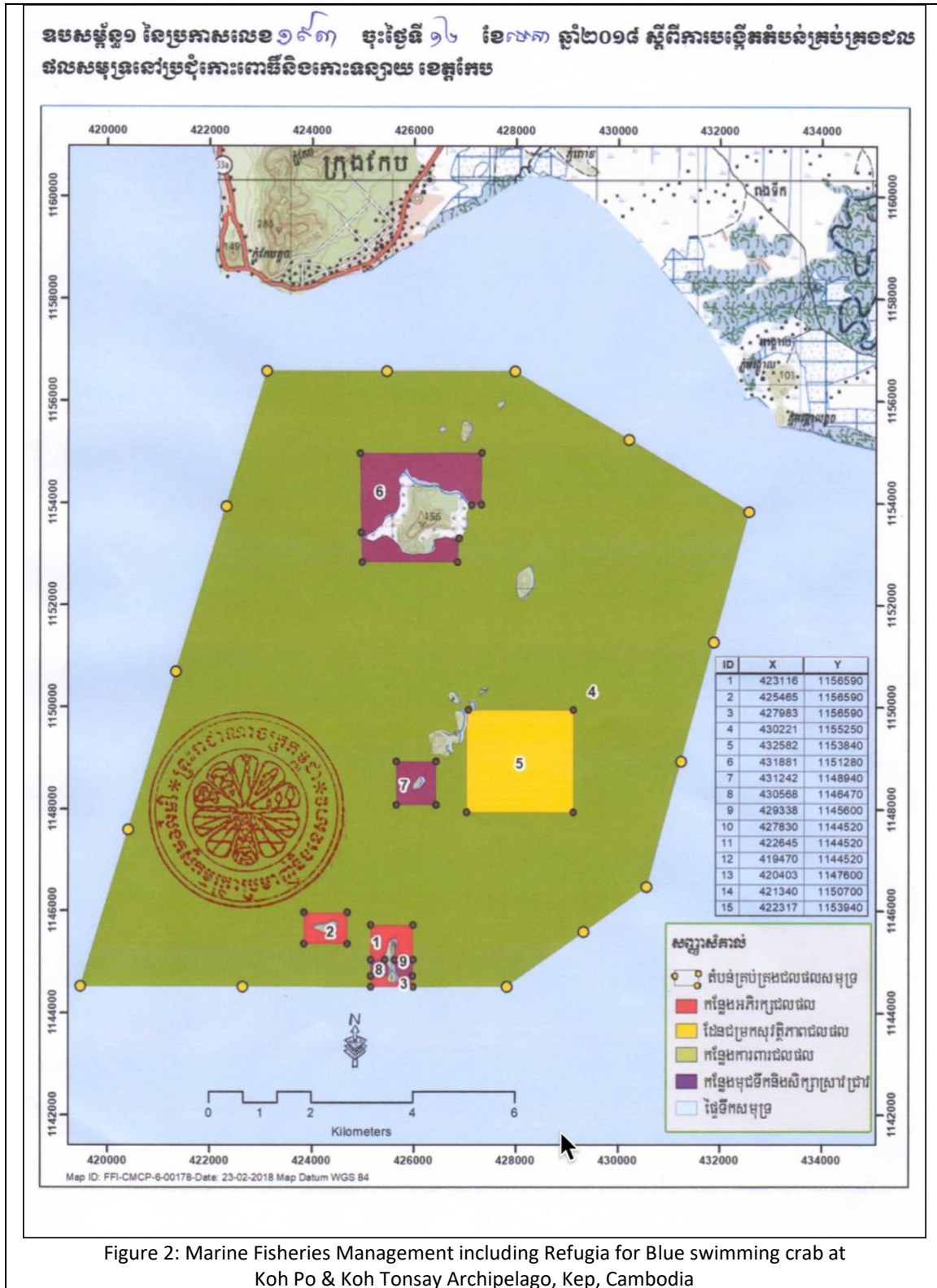


Figure 2: Marine Fisheries Management including Refugia for Blue swimming crab at Koh Po & Koh Tonsay Archipelago, Kep, Cambodia

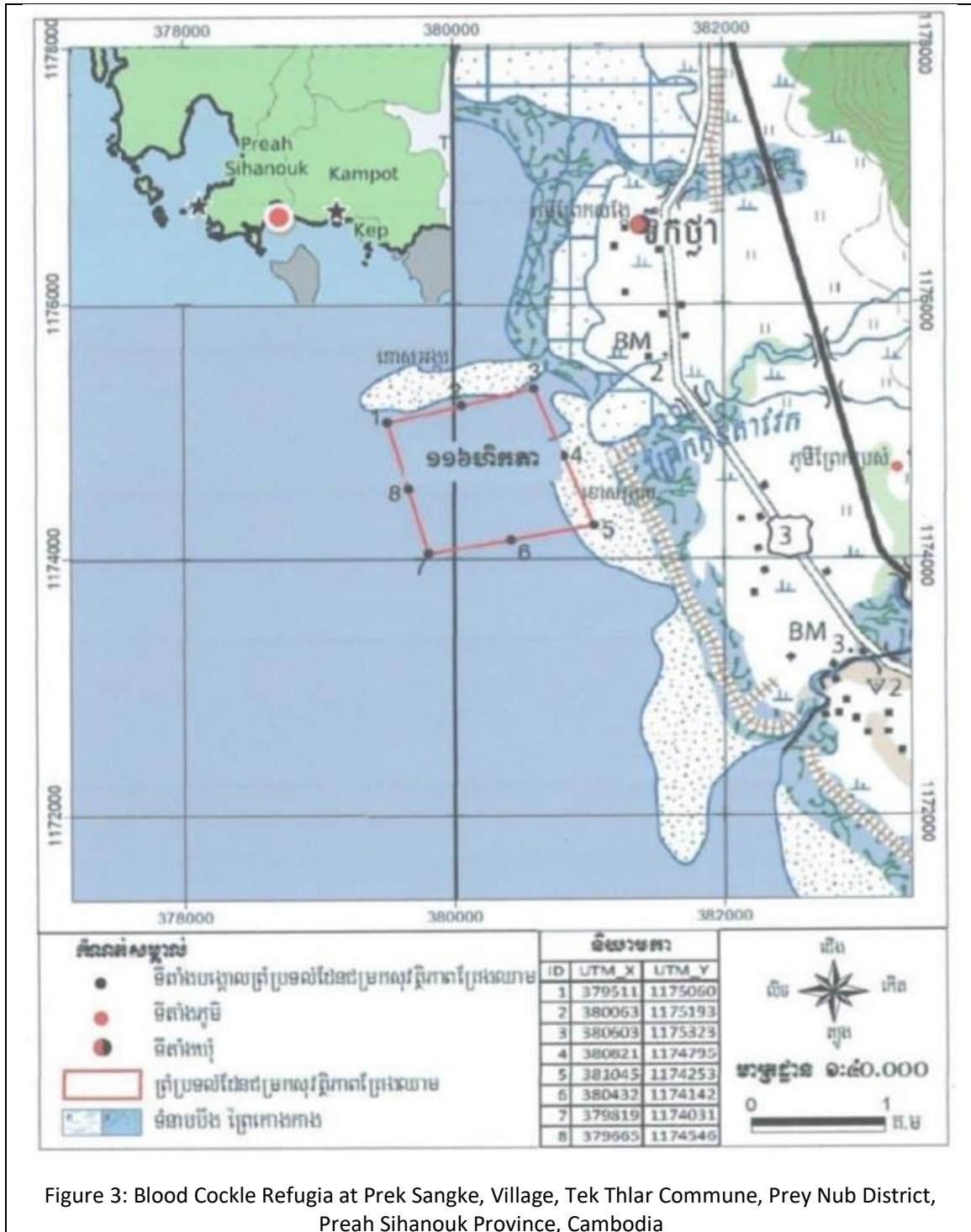


Figure 3: Blood Cockerle Refugia at Prek Sangke, Village, Tek Thlar Commune, Prey Nub District, Preah Sihanouk Province, Cambodia

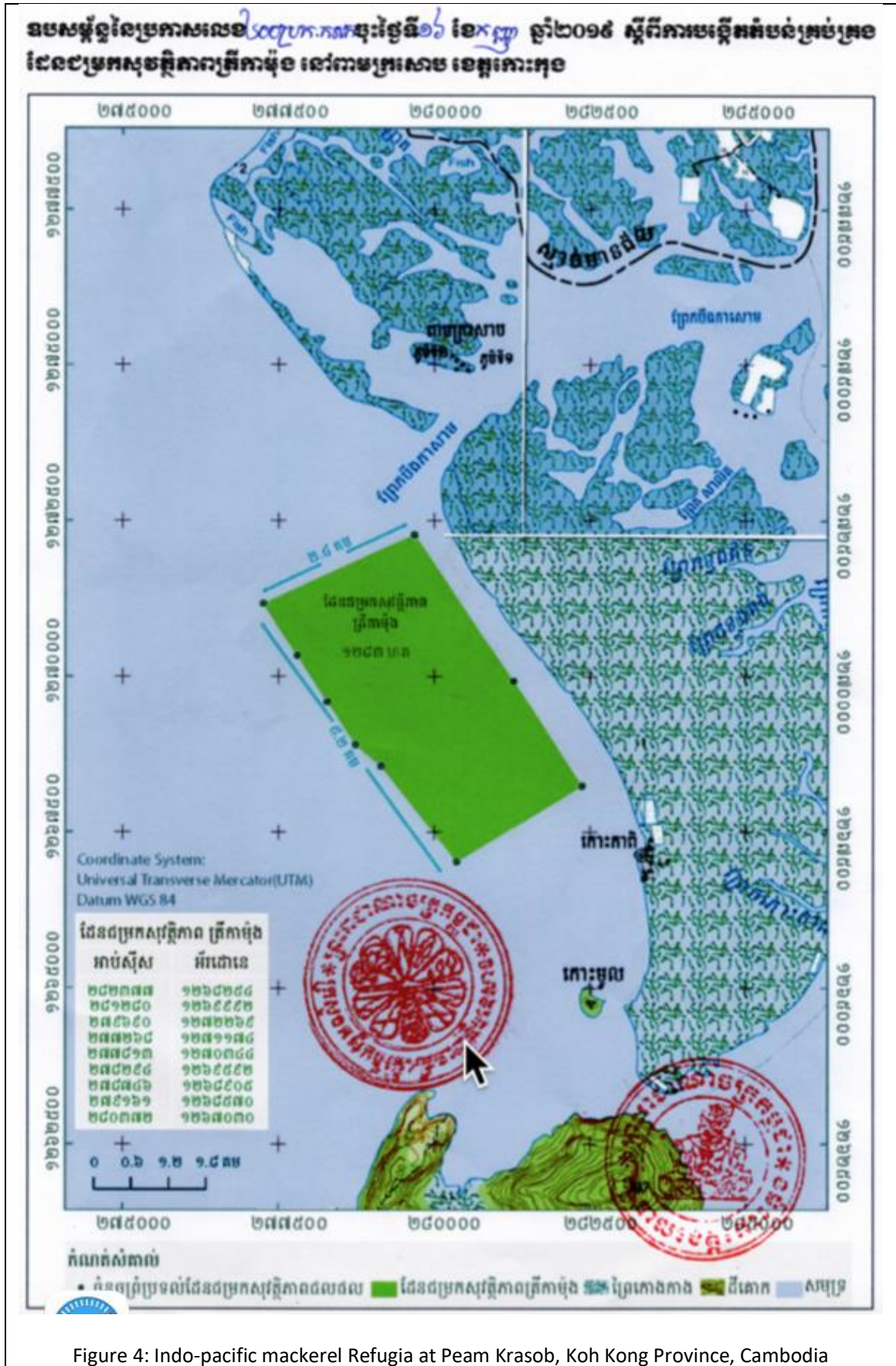


Figure 4: Indo-pacific mackerel Refugia at Peam Krasob, Koh Kong Province, Cambodia

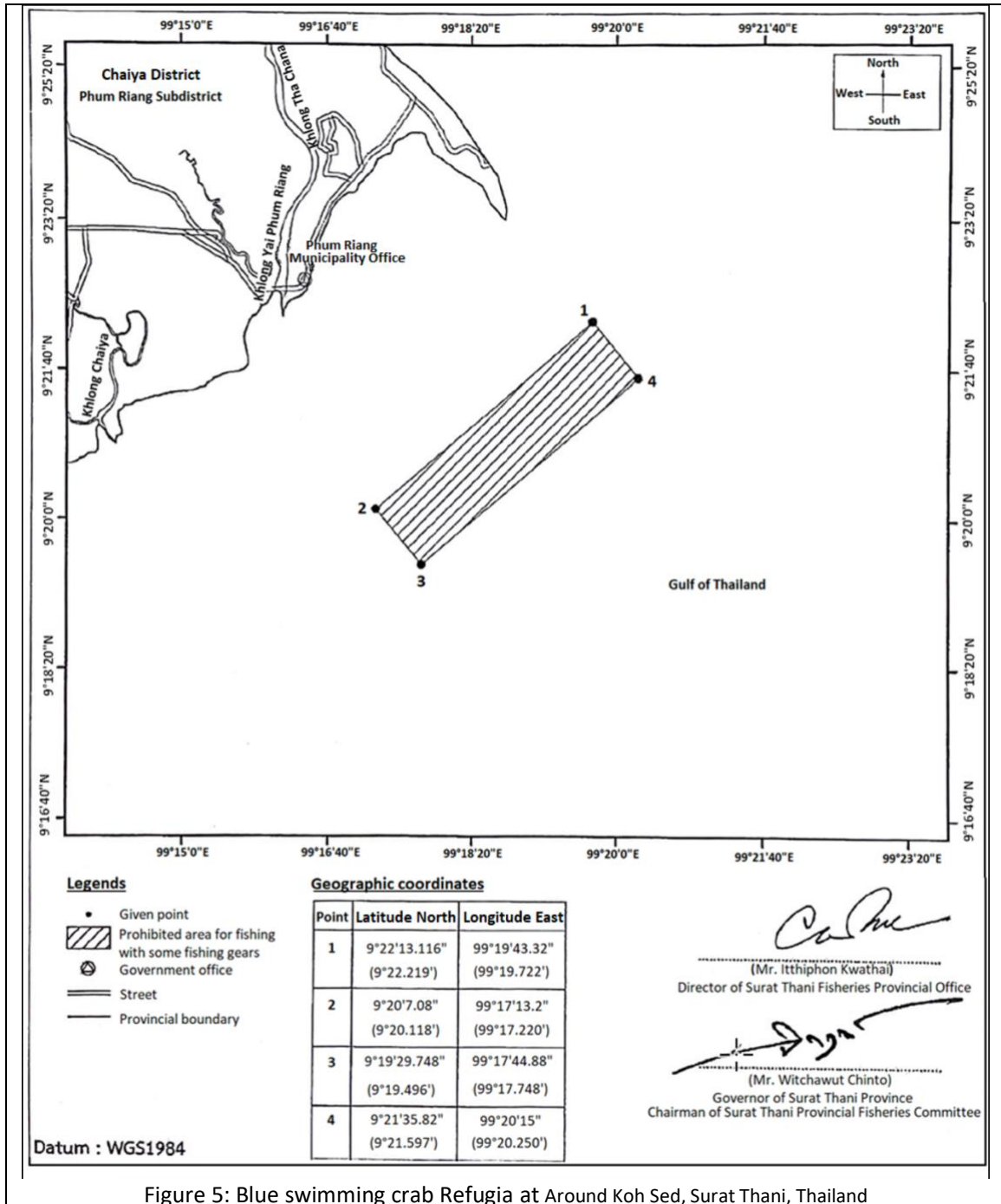


Figure 5: Blue swimming crab Refugia at Around Koh Sed, Surat Thani, Thailand

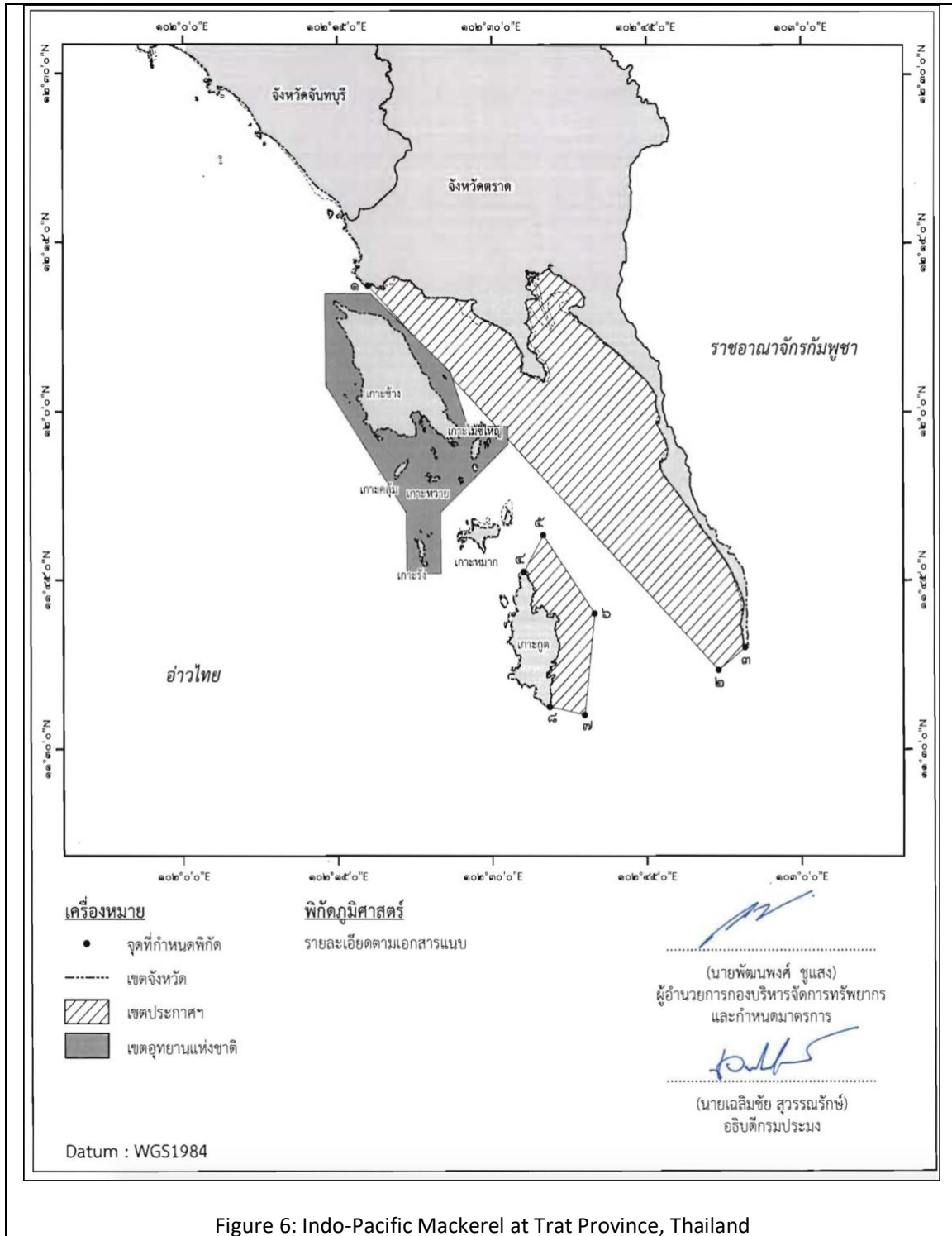


Figure 6: Indo-Pacific Mackerel at Trat Province, Thailand

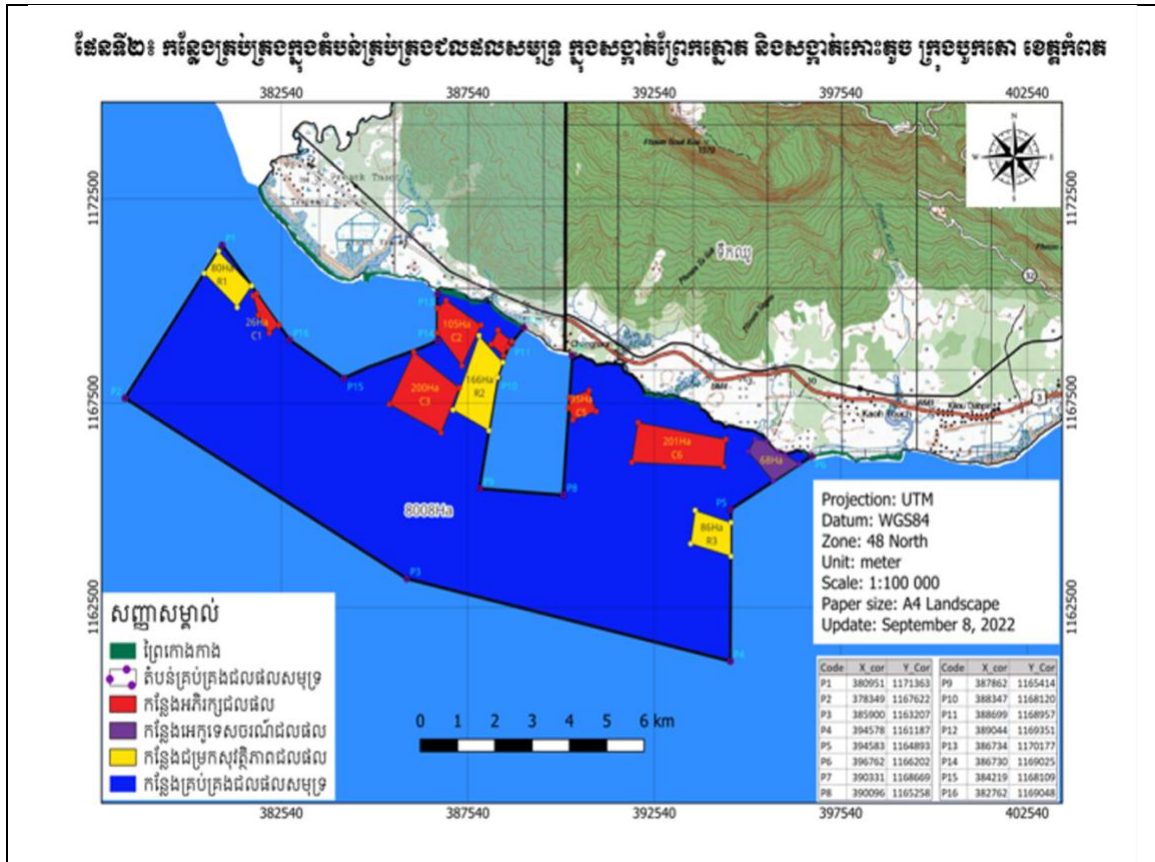


Figure 7: Group Refugia at Kampot Province, Cambodia

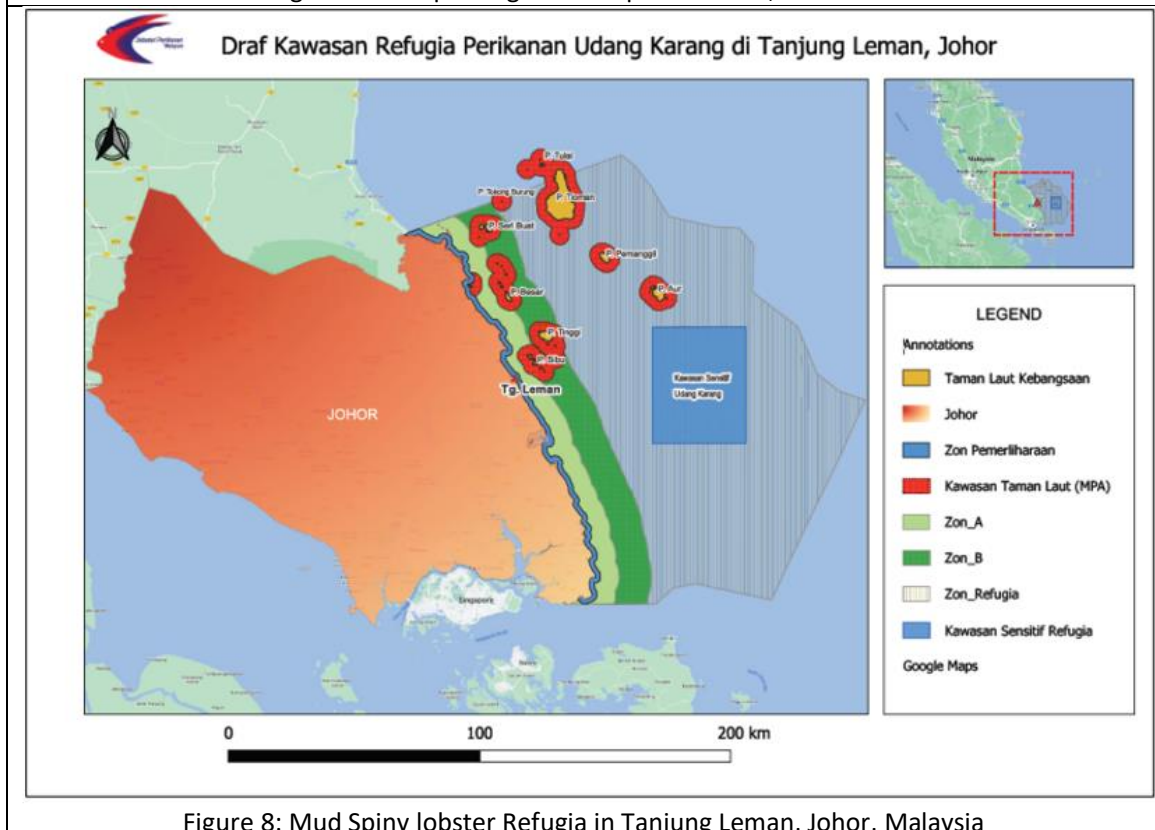
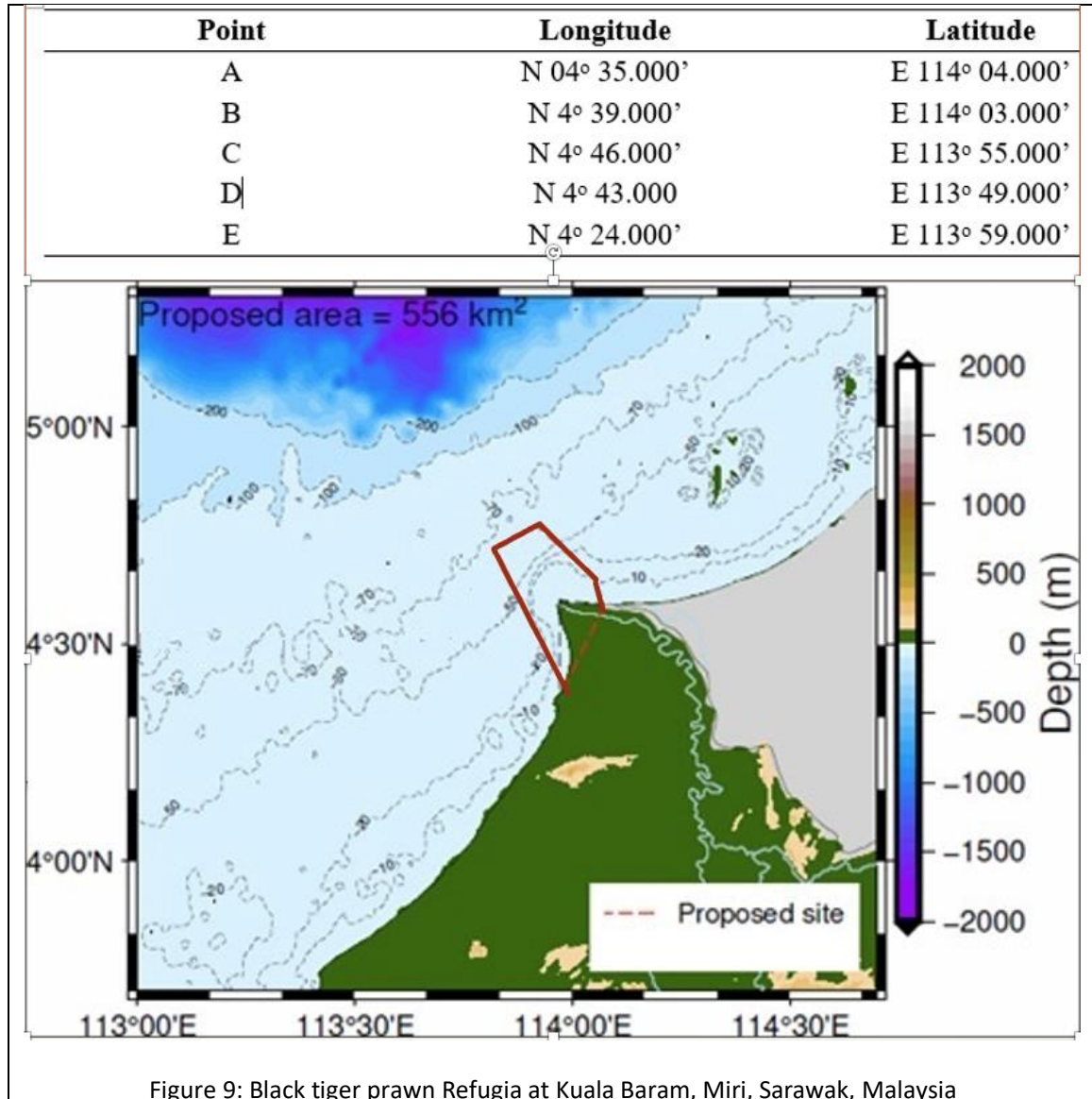
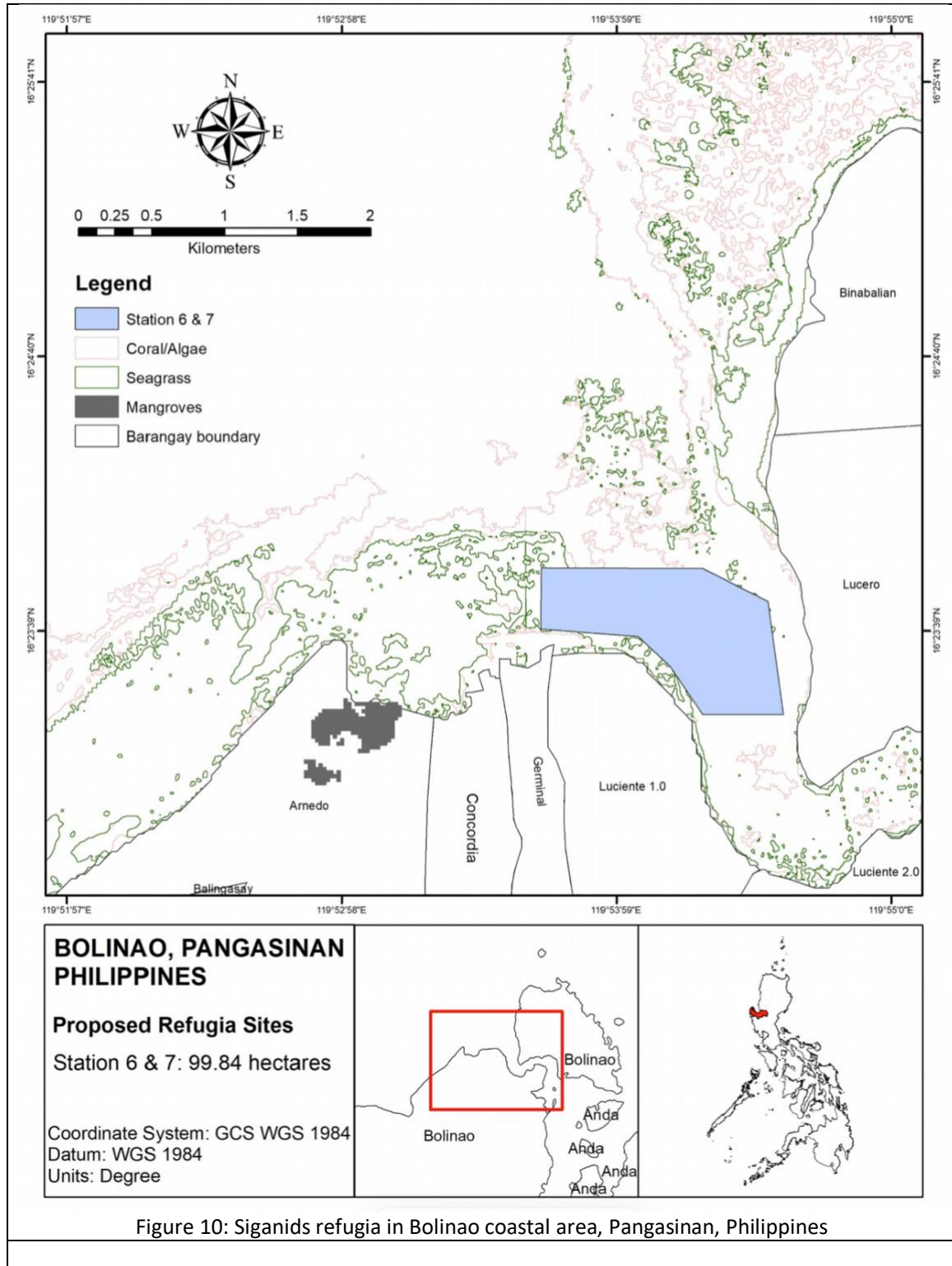
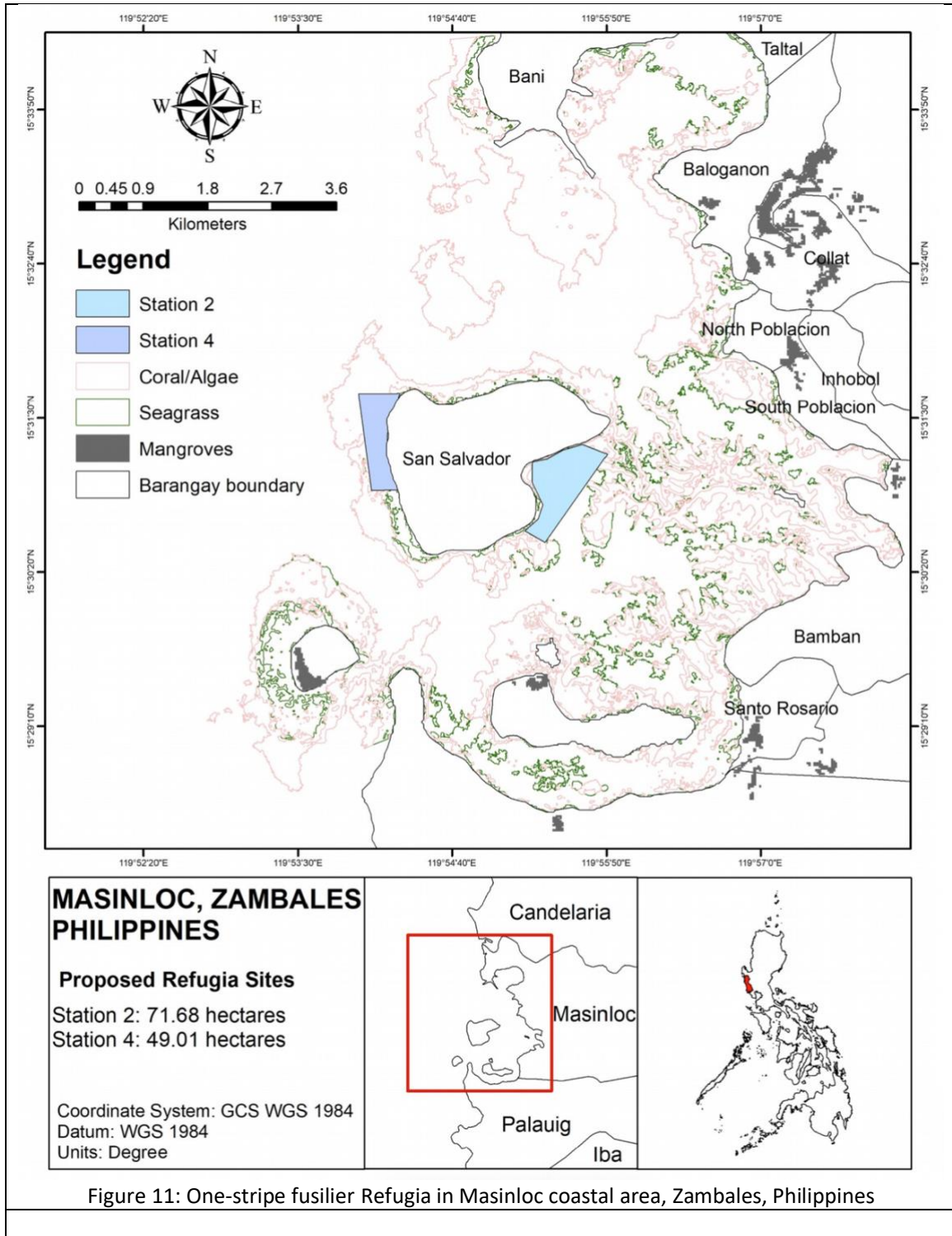
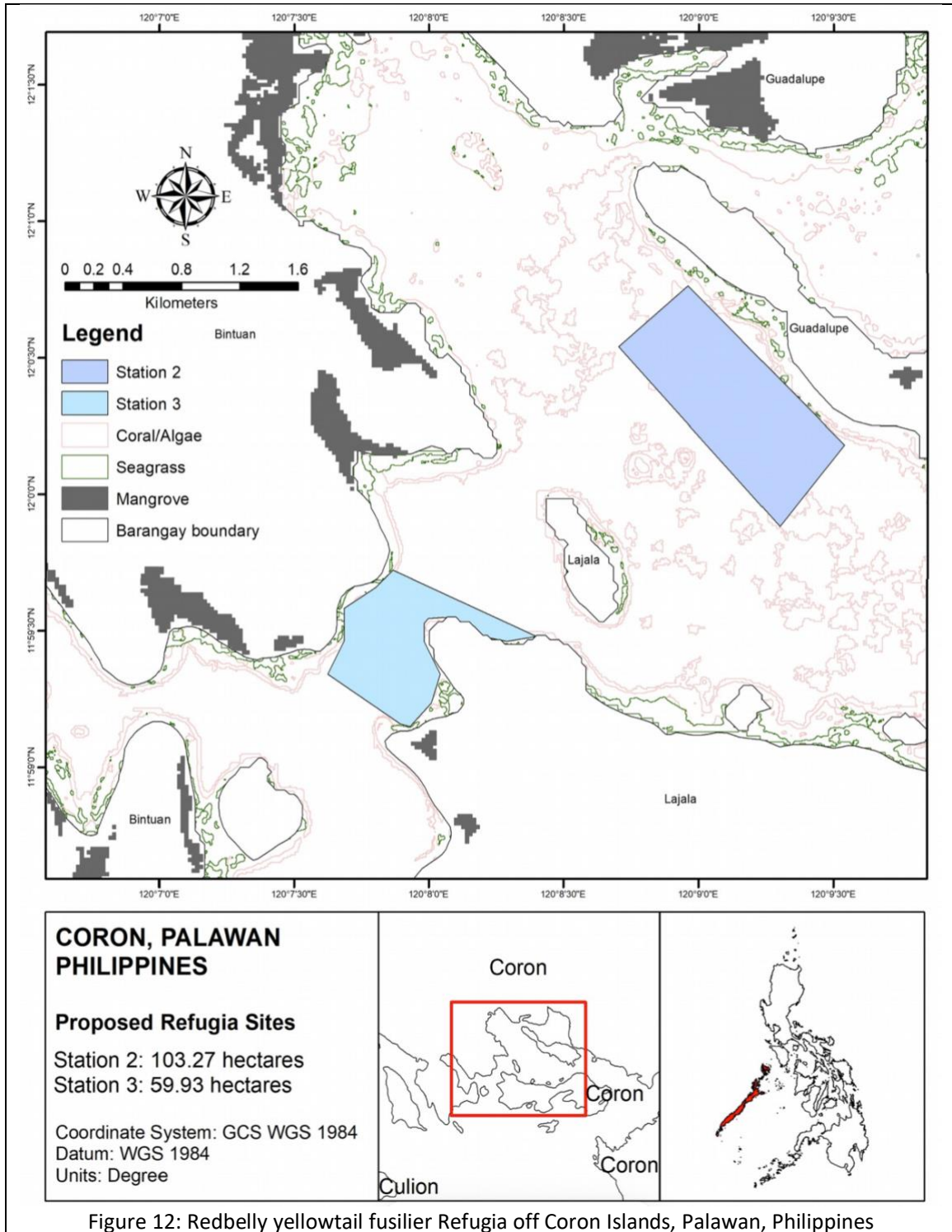


Figure 8: Mud Spiny lobster Refugia in Tanjung Leman, Johor, Malaysia









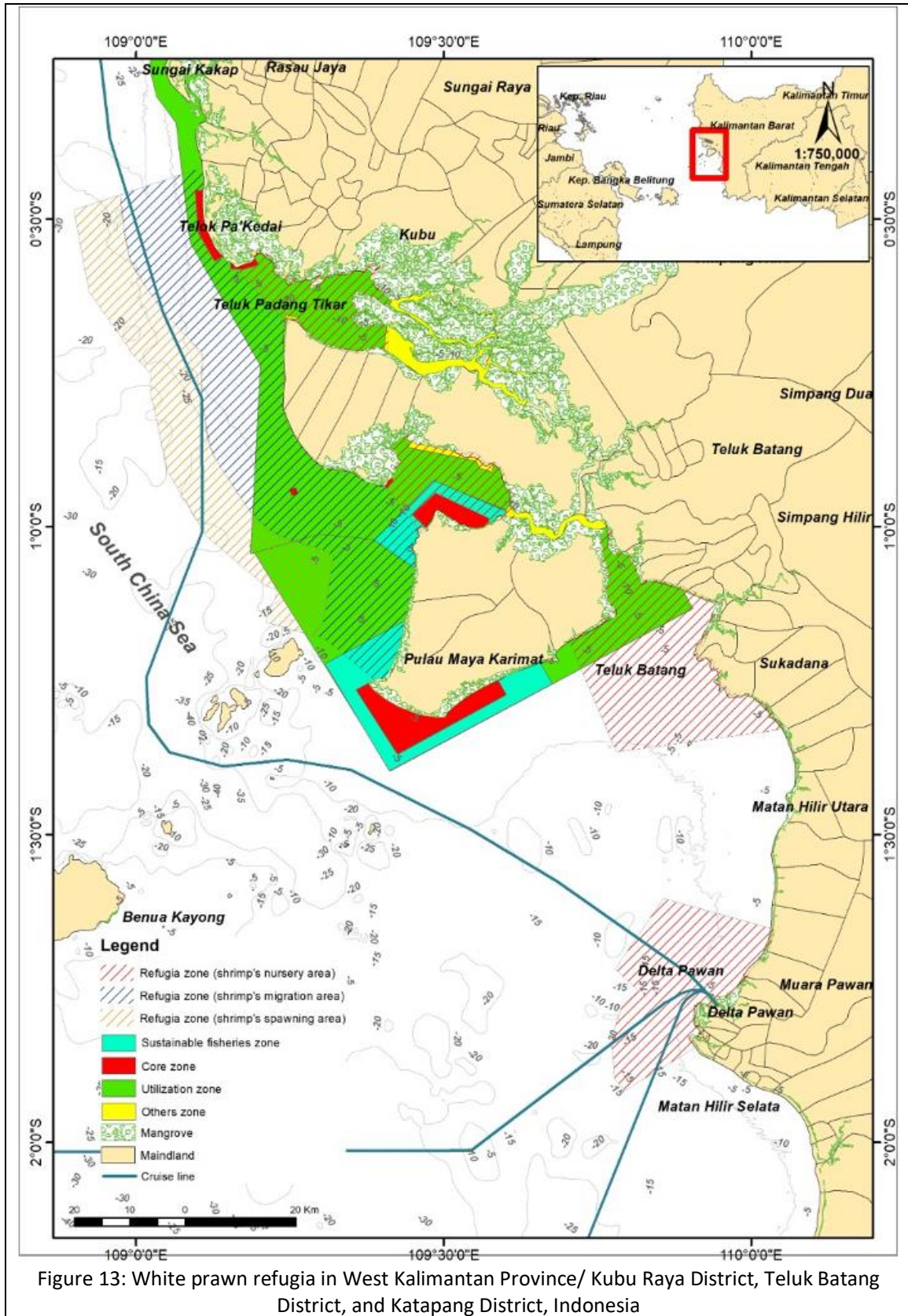


Figure 13: White prawn refugia in West Kalimantan Province/ Kubu Raya District, Teluk Batang District, and Katapang District, Indonesia

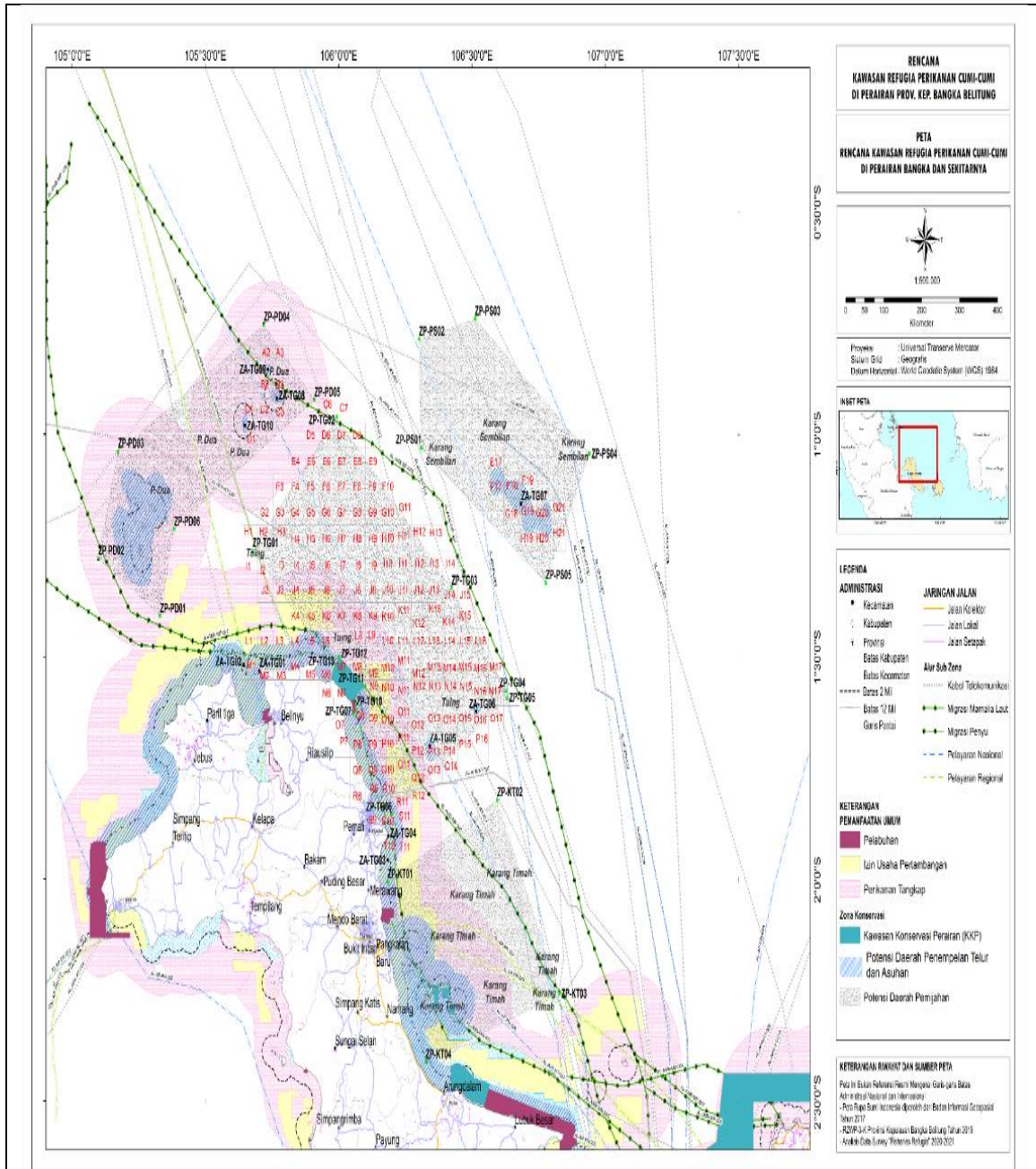


Figure 14: Squid Refugia in Bangka Belitung Province/ Bangka District, Indonesia



Figure 15: Blue swimming crab in east coast of Phu Quoc Island, Kien Giang Province, Viet Nam



Figure 16: Subcrenata ark clam Refugia in Coastal area of Lagi – Binh Thuan, Viet Nam

ANNEX 14: REGIONAL TRAINING COURSE ON FISH LARVAE

Larvae of marine fishes termed ichthyoplankton usually are pelagic, drifting in the sea and interacting with pelagic predators and planktonic prey. Most fish larvae, even species that ultimately are herbivores as juveniles or adults, are primarily carnivorous during the larval stage, feeding smaller planktonic organisms. In turn, larval fishes prey on larger nektonic and planktonic organisms. Escape from the precarious larval stage is accomplished via growth and ontogeny. Only a few individuals from thousands of newly hatched larvae survive the ever-present threats of starvation and predation during planktonic life. Surveys at sea generally estimate distributions, abundance, diversity, and structure of 'ichthyoplankton' communities, including associations of larvae with their predators and prey. Such surveys sometimes are a component of stock assessments used in fisheries management. Furthermore, many developed countries have long used ichthyoplankton data in stock identification to indicate spawning locations and times and as an index of spawning stock biomass (Heath, 1993; Richardson et al., 2010).

In Southeast Asia, early life stages in stock identification studies have been regionally conducted in the South China Sea (SCS) and the Gulf of Thailand (GoT) by the Southeast Asian Fisheries Development Center (SEAFDEC) in collaboration with member countries since 1997 by M.V. SEAFDEC and since 2004 by M.V. SEAFDEC 2. At the Regional Training Program on larval fish identification held in 2007, 2008, and 2016 supported by the GEF/UNEP project on "Reversing Environment Degradation Trends in the SCS and GoT," some larval fish samples from the survey have been identified. Later a team of ichthyologists and fisheries biologists led by Dr. Yoshinobu Konishi reanalyzed the findings from training and published a Larval Fish Identification Guide for the South China Sea and the Gulf of Thailand in 2008 and Scombridae Larvae Identification Guide for Southeast Asian Countries in 2022.

The SEAFDEC/UNEP/GEF project entitled "Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and the Gulf of Thailand" has been developed and implemented since 2016. The overall objective of the fisheries refugia (FR) initiative project is to improve the understanding and management of the links between fish stocks and critical fisheries habitats. The project focuses on sustainable use by implementing the fisheries refugia concept 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." To achieve the project target objectives, identifying fisheries refugia sites, including the samplings and species identified for fish eggs and larvae, is one of the essential activities. In addition, the results from larval fish identification would further support the local knowledge to develop a critical science-based management policy for sustainable management of fisheries refugia.

Nevertheless, knowledge and human resources on ichthyoplankton studies, particularly larval fish identification, are limited in many countries implementing the FR project. Many fish eggs and larvae were identified at family and genus levels, not at the species level. Considering the long-term sustainable management of fisheries, capacity building on larval fish identification and early life history science is also critically needed. In association with the above circumstance, the Regional Scientific and Technical Committee, at its third meeting (RSTC3) held in Hai Phong, Viet Nam, in 2020, requested the Project Coordination Unit (PCU) to arrange another regional training course on larval fish identification. Accordingly, the PCU, with the support from the Research and Development Division (RDD) of the SEAFDEC Training Department, proposes conducting the Regional Training Course on Larval Identification and Fish Early Life History Science before the fisheries refugia project's termination by the end of 2022. The Regional Training Course is scheduled on 16–27 November 2022 at SEAFDEC/Training Department, Samut Prakan, Thailand. The training focuses on six (6) fish groups related to the fisheries refugia target species, namely Scombridae, Carangidae, Engraulidae, Lutjanidae, Siganidae, and Serranidae. The training course includes sharing experience on a country plan/strategy for fisheries resources survey and fish stock identification, including scientific-based management to protect the critical stages of the fish life cycle. It is expected that the outcomes from this training courses are: 1) improved understanding of fish early life history science and skill in larval fish identification for further application for managing the fish stock at national and sub-regional levels; 2) Regional cooperation on fish stock identification and management strengthened through communication networking; and 3) built awareness of the importance of the early life history science study

for fish stock identification and management for long-term sustainable fisheries management. The expected outputs from this activity are: a networking of scientists on larval fish identification and early life history science in the Southeast Asian Region; reports and training materials are published and shared online; and photographs and illustrations of morphological characteristics of the marine fish larvae are compiled and published online.

List of Resources Persons and Technical/Administrative support are as follows:

Resource Persons	Position/Institution
1) Dr. Yoshinobu KONISHI	Former staff of the Seikai National Fisheries Research Institute, Japan
2) Mr. Rangsan CHAYAKUL	Former staff of the Department of Fisheries, Thailand
3) Dr. Teerapong DUANGDEE	Lecturer, Kasetsart University, Thailand
4) Dr. Keita KOEDA	Lecturer, University of the Ryukyus, Japan
5) Dr. Cecilia CHU	Researcher, University of Nottingham Malaysia
Technical and Administrative Support	SEAFDEC/TD
1) Mr. Sukchai ARNUPAPBOON	Fisheries Oceanographer, Head of Research and Development Division (RDD)
2) Ms. Siriporn PANGSORN	Fishing Ground Information scientist, RDD
3) Ms. Nathacha CHANGPHETPHOL	Fishery Oceanographer, RDD
4) Ms. Nathacha SORNVAREE	Administrative Officer, RDD
5) Ms. Nujasa SOMJIT	Finance Officer, Refugia PCU
6) Ms. Nuttaya PHAISANTAWECHOK	Technical/Admin Officer, Refugia PCU

TRAINING PROGRAM		
Date/Time	Training Activity/Topic	Responsibility
15 Nov. 22 – Tuesday		
	Participants arrive at SEAFDEC Training Department, Samut Prakan, Thailand	SEAFDEC Personnel
16 Nov. 22 – Wednesday		
0830–0900	Registration	All Participants
0900–0920	Opening ceremony & group photo	SEAFDEC/TD FR/PCU
0920–0940	Brief on schedule and anticipated outputs	SEAFDEC Personnel
0940–1000	Coffee break	SEAFDEC Personnel
1000–1200	Country report on the research plan for fisheries resources survey and study on fish stock identification (15 minutes for each country)	Country Representative (10 Countries)
1200–1330	Lunch break	SEAFDEC Personnel
1330–1430	Keynote Address: Early life history studies of the subtropical marine fishes in Okinawa, Japan (via Online)	Dr. Keita KOEDA
1430–1450	Coffee break	SEAFDEC Personnel
1450–1600	Lecture: Utilization of DNA barcodes for the identification of tropical larval fishes in Klang Strait, Straits of Malacca	Dr. Cecilia CHU
1600–1700	Practical: DNA barcode collecting and preserving technique	Dr. Cecilia CHU
17 Nov. 22 – Thursday		
0900–1000	Lecture: Review of morphological development of larval fish characters	Dr. Yoshinobu KONISHI
1000–1020	Coffee break	SEAFDEC Personnel
1020–1200	Lecture: Identification methods of the Scombridae larvae and juveniles in the Southeast Asian region	Dr. Yoshinobu KONISHI
1200–1330	Lunch break	SEAFDEC Personnel
1330–1500	Practice: Species identification and morphological description of the Scombridae larvae and juveniles (1)	Instructor Team Dr. Yoshinobu KONISHI, Mr. Rangsan CHAYAKUL Dr. Teerapong DUANGDEE
1500–1520	Coffee break	SEAFDEC Personnel
1520–1700	Continued Practice: Species identification and morphological description of the Scombridae larvae and juveniles (1)	Instructor Team
18 Nov. 22 – Friday		
0900–1000	Practice: Species identification and morphological description of the Scombridae larvae and juveniles (2)	Instructor Team
1000–1020	Coffee break	SEAFDEC Personnel
1020–1200	Continued Practice: Species identification and morphological description of the Scombridae larvae and juveniles (2)	Instructor Team

1200–1330	Lunch break	SEAFDEC Personnel
1330–1500	Practice: Species identification and morphological description of the Scombridae larvae and juveniles (3)	Instructor Team
1500–1520	Coffee break	SEAFDEC Personnel
1520–1700	Continued Practice: Species identification and morphological description of the Scombridae larvae and juveniles (3)	Instructor Team
19 Nov. 22 – Saturday		
0900–1000	Lecture: Identification methods of the Carangidae larvae in the Southeast Asian region	Dr. Yoshinobu KONISHI
1000–1020	Coffee break	SEAFDEC Personnel
1020–1200	Practice: Species identification and morphological description of the Carangidae larvae (1)	Instructor Team
1200–1330	Lunch break	SEAFDEC Personnel
1330–1500	Practice: Species identification and morphological description of the Carangidae larvae (2)	Instructor Team
1500–1520	Coffee break	SEAFDEC Personnel
1520–1700	Continued Practice: Species identification and morphological description of the Carangidae larvae (2)	Instructor Team
20 Nov. 22 – Sunday		
	Refreshment/Excursion	SEAFDEC Personnel
21 Nov. 22 – Monday		
0900–1000	Practice: Species identification and morphological description of the Carangidae larvae (3)	Instructor Team
1000–1020	Coffee break	SEAFDEC Personnel
1020–1200	Continued Practice: Species identification and morphological description of the Carangidae larvae (3)	Instructor Team
1200–1330	Lunch break	SEAFDEC Personnel
1330–1430	Lecture: Identification methods of the Engraulidae larvae in the Southeast Asian region	Dr. Yoshinobu KONISHI
1430–1500	Practice: Species identification and morphological description of the Engraulidae larvae (1)	Instructor Team
1500–1520	Coffee break	SEAFDEC Personnel
1520–1700	Continued Practice: Species identification and morphological description of the Engraulidae larvae (1)	Instructor Team
22 Nov. 22 – Tuesday		
0900–1000	Practice: Species identification and morphological description of the Engraulidae larvae (2)	Instructor Team
1000–1020	Coffee break	SEAFDEC Personnel
1020–1200	Continued Practice: Species identification and morphological description of the Engraulidae larvae (2)	Instructor Team
1200–1330	Lunch break	SEAFDEC Personnel
1330–1500	Practice: Species identification and morphological description of the Engraulidae larvae (3)	Instructor Team
1500–1520	Coffee break	SEAFDEC Personnel
1520–1700	Continued Practice: Species identification and morphological description of the Engraulidae larvae (3)	Instructor Team
23 Nov. 22 – Wednesday		

0900–1000	Presentation of case study on early life history science based on the references for planning of future working subjects in country	Country Representative (10 Countries)
1000–1020	Coffee break	SEAFDEC Personnel
1020–1200	Continued Presentation of case study on early life history science based on the references for planning of future working subjects in country	Country Representative (10 Countries)
1200–1330	Lunch break	SEAFDEC Personnel
1330–1430	Lecture: Identification methods of the Lutjanidae, Siganidae and serranid Epinephelinae larvae in the Southeast Asian region	Dr. Yoshinobu KONISHI
1430–1500	Practice: Species identification and morphological description of the Lutjanidae, Siganidae and serranid Epinephelinae larvae (1)	Instructor Team
1500–1520	Coffee break	SEAFDEC Personnel
1520–1700	Continued Practice: Species identification and morphological description of the Lutjanidae, Siganidae and serranid Epinephelinae larvae (1)	Instructor Team
24 Nov. 22 – Thursday		
0900–1000	Practice: Species identification and morphological description of the Lutjanidae, Siganidae and serranid Epinephelinae larvae (2)	Instructor Team
1000–1020	Coffee break	SEAFDEC Personnel
1020–1200	Continued Practice: Species identification and morphological description of the Lutjanidae, Siganidae and serranid Epinephelinae larvae (2)	Instructor Team
1200–1330	Lunch break	SEAFDEC Personnel
1330–1500	Practice: Species identification and morphological description of the Lutjanidae, Siganidae and serranid Epinephelinae larvae (3)	Instructor Team
1500–1520	Coffee break	SEAFDEC Personnel
1520–1700	Continued Practice: Species identification and morphological description of the Lutjanidae, Siganidae and serranid Epinephelinae larvae (3)	Instructor Team
25 Nov. 22 – Friday		
0900–1000	Practice: Species identification and morphological description of the Lutjanidae, Siganidae and serranid Epinephelinae larvae (4)	Instructor Team
1000–1020	Coffee break	SEAFDEC Personnel
1020–1200	Continued Practice: Species identification and morphological description of the Lutjanidae, Siganidae and serranid Epinephelinae larvae (4)	Instructor Team
1200–1330	Lunch break	SEAFDEC Personnel
1330–1500	Preparation of presentation on species identification and morphological descriptions of examined larvae and juveniles, and on future working subjects to be planned	Country Representative (10 Countries)
1500–1520	Coffee break	SEAFDEC Personnel
1520–1700	Continued Preparation of presentation on species identification and morphological descriptions of examined larvae and juveniles, and on future working subjects to be planned	Country Representative (10 Countries)
26 Nov. 22 – Saturday		
0900–1000	Presentation on results of species identification and morphological descriptions of examined larvae and juveniles, and on future working subjects to be planned	Country Representative (10 Countries)
1000–1020	Coffee break	SEAFDEC Personnel

1020–1200	Continued Presentation on results of species identification and morphological descriptions of examined larvae and juveniles, and on future working subjects to be planned	Country Representative (10 Countries)
1200–1330	Lunch break	SEAFDEC Personnel
1330–1430	Training course evaluation	FR/PCU
1430–1500	Closing Ceremony for Phase I	FR/PCU SEAFDEC/TD
	Free	
1700–2200	Farewell Dinner	
27 Nov. 22 – Sunday		
	Refreshment/Excursion	SEAFDEC Personnel

ANNEX 15: GEF IW-EXPERIENCE NOTES

A: ESTABLISHMENT AND MANAGEMENT OF FISHERIES REFUGIA IN CAMBODIA



ABSTRACT

Cambodia has started to implement fisheries refugia project since 2017 until now, and 3 pilot sites of the project have been selected in Kep, Kampot, and Koh Kong provinces, including Kep for BSC refugia, Kampot for Juvenile refugia, and Koh Kong for Indo-Pacific Mackerel.

Two fisheries refugia in Kep and Koh Kong provinces have been endorsed by the Royal Government, three fisheries refugia profile in Kep, Kampot, and Koh Kong provinces were completed, and 5 year-management plans for Marine Fisheries Refugia and BSC refugia at Koh Po and Koh Tonsay Archipelago, Kep province was adopted by Kep Provincial Governor and Director General of FiA. At the same time, two site base management boards in Kep and Koh Kong provinces were formulated by the provincial governor to coordinate and solve all challenges happening during fisheries refugia management and operation.

Lesson learned from three pilot sites, Blood Cackle Refugia at Prey Nob, Preah Sihanouk province has been endorsed by the Royal Governor of Cambodia on 20 August 2020 in terms of sustainable management and utilization of fisheries sources resources. Recently, Cambodia exchanged experiences and knowledge on fisheries refugia management and establishment with the Department of Fisheries of the Kingdom of Thailand in Kep and Kampot provinces.

Fisheries refugia is a management tool in ensuring sustainable fishing, restoring marine habitat, fisheries management, and addressing climate change impacts, so the fisheries refugia concept is a good practice and measure of marine fisheries resources in line with MAFF's Policy in the establishment of Marine Fisheries Management Area in coastal provinces in term of sustainable utilization of marine fisheries resources. In particular, its concept was integrated into 1) National Plan of Action for Combating IUU Fishing, 2) Final draft of 10-year strategy plan for fisheries conservation, 3) Marine Management Plan, 4) The draft New Law on Fisheries.

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ESTABLISHMENT AND MANAGEMENT OF FISHERIES REFUGIA IN CAMBODIA

PROJECT DESCRIPTION

Cambodia started to implement Fisheries Refugia Project in 2017 until now. Three pilot sites of the project have been selected in Kep, Koh Kong, and Kampot provinces, including Marine Fisheries Management Area including blue swimming crab refugia at Koh Po and Koh Tonsay Archipelago in Kep, Indo-pacific mackerel refugia at Peam Krasob in Koh Kong, and Marine Fisheries Management Area including Juvenile Grouper refugia at Prek Thnoat in Kampot provinces.

Marine Fisheries Management Area, including blue swimming crab (BSC) refugia at Koh Po and Koh Tonsay Archipelago in Kep, covers a total size of 11,307 ha, including 417 ha for BSC Refugia and has been endorsed by the Royal Government of Cambodia (RGC) on 12 April 2018. Indo-pacific mackerel refugia at Peam Krasob in Koh Kong province covered a total area of 1,283 ha and was endorsed by the RGC on 16 September 2019. Marine Fisheries Management Area, including Juvenile Grouper refugia at Prek Thnoat in Kampot provinces, covers a total size of 8,008 ha, including 332 ha for Juvenile Grouper Refugia, and has not been approved by the RGC and is now in the process of finalizing new boundary with province governor.

In addition, Cambodia established other fisheries refugia sites at Prey Nob, Preah Sihanouk province, focusing on blood cockle species named “Blood Cockle Refugia at Preay Nob, Preah Sihanouk province. This refugia site covered a total area of 116 ha and was endorsed by the RGC on 20 August 2020.

Objectives of establishment and management of fisheries refugia are to 1) ensure fish stock and sustainable fishing, 2) improve marine habitat and ecological system, 3) reduce threats to habitat linkages and fisheries resources, and 4) enhance local livelihood.

THE EXPERIENCE

- **ISSUES**

Some issues have been met during the fisheries refugia project implementation. They are as follows:

- It is hard to prepare a meeting with provincial administration leaders (i.e., Provincial Governor or Deputy Governor), always postpones the meeting with them a few times;
- Fisheries Refugia in Kampot province has been postponed for approval due to changing new provincial governor and the impact on the development companies; however, it is expected to be endorsed at the end of this year.
- COVID-19 pandemic outbreaks in the project target provinces.
- It is observed that there are still a few numbers of illegal fishing activities at the refugia site during the closing season; and
- Community fisheries and Fisheries Administration Cantonment still lack the budget, materials, and equipment for patrolling and cracking down on illegal fishing activities.

- **ADDRESSING THE ISSUES**

Four points are proposed to establish and manage fisheries refugia in Cambodia. Those points are described as follows:

1. Key Stakeholder Engaged in the Establishment of Fisheries Refugia

Stakeholder consultation meetings play a prominent role in supporting the process of the establishment of fisheries refugia in Cambodia. Key relevant stakeholders were included at the national and provincial levels, which were from

Key stakeholders engaged in the establishment of fisheries refugia in Cambodia are included at national and provincial levels. They are from Provincial Hall Administration, Fisheries Administration, Involved Provincial Departments, Provincial Police, Provincial Military Police, Maritime Police, Involved District and Commune Authorities, Development Partners (MCC, WCS, WEA, and FFI), Private Sector, and Community Fisheries

2. Key Stakeholders Engaged in Site Base Management Board

Site Base Management Boards (SBMB) are formulated to coordinate and solve all challenges taking place during the project implementation at the site level. In Kep province, there are two types of SBMB: the Provincial Management Committee, chaired by the Provincial Governor, and the Technical Working Group, chaired by the Provincial Deputy Governor. In Koh Kong province, there is only one committee, the Technical Working Group, chaired by Provincial Deputy Governor.

Key stakeholders engaged in site base management boards are from Provincial Hall Administration, Fisheries Administration, Involved Provincial Departments, Provincial Police, Provincial Military Police, Maritime Police, Involved District Governor, and Maritime Ocean Committee.

3. Research Studies

The project conducted research on Indo-Pacific Mackerel biological studies in Koh Kong province, with technical assistance from SEAFDEC and PCU, starting from February 2019 to March 2020. The objective of the research was to provide scientific information and data for supporting the establishment and management of Indo-Pacific Mackerel *refugia* in Koh Kong province.

The research studies collaborated with the Fisheries Administration Cantonment in Koh Kong province (FiAC) and the Royal University of Agriculture (RUA) in Cambodia, focusing on the operation of short mackerel gonad to identify the stage of fish gonad development from stage 1 to 5.

4. Management Measures

Management measures are taken as follows:

- Practicing closing season of targeted species. For example, BSC starts from May to July, and Indo-Pacific Mackerel starts from December to March. All kinds of fishing gear targeting to catch these species are prohibited;
- Installing mooring buoys around the boundary of fisheries refugia sites to demonstrate the refugia sites to fishermen during the closing season;
- Patrolling, cracking down illegal fishing, and standing by at the refugia site during the closing season;
- Deploying concrete blocks into MFMA and refugia sites in order to protect marine habitat, improve marine habitat, and prevent illegal fishing activities; and

- Disseminating a notice letter issued by provincial administration on closing season

RESULTS AND LEARNING

The Royal Government of Cambodia endorsed three fisheries refugia sites. Marine Fisheries Management Area, including Blue Swimming Crab Refugia in Kep province, was adopted on 12 April 2018, and Indo-Pacific Mackerel at Peam Krasob, Koh Kong province, was adopted on 16 September 2022. But Marine Fisheries Management Area, including Juvenile Grouper Refugia in Kampot province, has been in the process of finalizing the new boundary with the Provincial Governor, and It is expected to be adopted at the end of this year. At the same time, the concept of fisheries refugia has been integrated into 1) National Plan of Action for Combating IUU Fishing, 2) Final draft of a 10-year strategy plan for fisheries conservation, 3) Marine Management Plan, 4) The draft New Law on Fisheries as follows:

- Article 15 and 16: Stated about type of Fisheries Management with the inclusion of Fisheries Refugia (FR)
- Article 17: Stated about Legal type to support the establishment of FR
- Article 20: Stated about Where FR shall be established
- Article 24: Stated about Restriction of fishing activities within FR
- Article 126: Stated about Penalty (250\$ - 2500\$), and in some cases the amount is double.

Moreover, three fisheries refugia profiles in Kep, Kampot, and Koh Kong provinces were published and completed, and 5 year-Action Plan for the Marine Fisheries Management Area, including BSC refugia at Koh Po and Koh Tonsay Archipelago, Kep province, were officially approved by Kep Governor and Director General of FiA. The provincial governor officially formulated two site-based management boards in Kep and Koh Kong provinces. In particular, leaflets on fisheries refugia were published and distributed to participants during National Fish Day Ceremony on 1st July 2022, presided over by the Prime Minister of the Kingdom of Cambodia.

The establishment of fisheries refugia plays a prominent role in ensuring sustainable fishing in the present and long-term management, so the fisheries refugia concept is a good practice and measure of marine fisheries resources in line with MAFF's Policy in the establishment of Marine Fisheries Management Area in coastal provinces in term of sustainable utilization of marine fisheries resources.

REPLICATION

Based on the lesson learned from three pilot sites under the refugia project in Kep, Kampot, and Koh Kong provinces, Blood Cackle Refugia at Prey Nob, Preah Sihanouk province, was endorsed by the Royal Governor of Cambodia on 28 August 2020 in term of sustainable management and utilization of fisheries sources resources, especially blood cockle in that site.

Moreover, FiA discussed with Development Partners and Fisheries Administration Cantonments (FiAC) in coastal provinces, and they will plan to propose the development of more fisheries refugia sites in their target provinces. FiAC -Kampot province will plan to establish five fisheries refugia sites in a total area of 472 ha with targeted species such as young mud crab, juvenile grouper, rabbitfish, and oyster. FiAC- Kep province will plan to establish a new site for blue swimming crab refugia in the size of 50 ha. FiAC- Koh Kong province will plan to create a new site for blood cockle refugia in the size of 200 ha. FiAC- Preah Sihanouk provinces will plan to create four fisheries refugia sites in a total area of 810 ha with targeted species such as shellfish, vinegar crab, and blood cockle. In general, FiAC in coastal provinces will plan to propose the development of 11 new fisheries refugia sites in their target provinces with a size of 1,532 ha.

Recently, the fisheries refugia project in Cambodia exchanged the experiences and Knowledge on management and establishment approaches of fisheries refugia with the Department of Fisheries (DoF) of the Kingdom of Thailand from 12 to 14 September 2022 in Kep and Kampot provinces.

SIGNIFICANCE

The fisheries refugia project is very significant to GEF IW project and transboundary water resources management. This project supported transboundary species management measures in the regional level. Regional Action Plan for Transboundary Species, Indo-Pacific Mackerel in Gulf of Thailand Sub-Region were developed and adopted.

Moreover, the fisheries refugia project is a management tool for ensuring sustainable fishing, restoring marine habitat, fisheries management, and addressing climate change impacts. The lesson learned from this project could be adapted to other marine areas where over-fishing and inappropriate fishing gears and practices are significant impediments to the sustainable exploitation of fisheries resources and utilization of coastal habitat.

REFERENCES

High Ranking Official from MAFF monitored Activities of Short Mackerel Refugia in Koh Kong Province <https://fisheries-refugia.org/refugia-country-activities/refugia-cambodia>;

Integration of habitat conservation into fishery management in the South China Sea areas enhanced via the fisheries *refugia* approach <https://fisheries-refugia.org>.

KEYWORDS

- South China Sea
- Gulf of Thailand
- Fisheries Refugia
- Marine habitat and ecosystem
- Marine Fisheries Management Area
- Transboundary species

ANNEX 15: GEF IW-EXPERIENCE NOTES

B: TOWARD FISHERIES REFUGIA IN INDONESIA COASTAL WATER

**ABSTRACT**

Fisheries refugia in Indonesia is considered a novel approach to Indonesian fisheries management by offering a balance between ecological and economic interests. This approach may become a rapid solution in response to the currently degrading habitat and declining fisheries resources. The identified 409,432 Ha shrimp refugia area in West Kalimantan Province and the 1,529,097.93 Ha of potential fisheries refugia area for squid in Bangka Belitung Province became a breakthrough to be recommended as fisheries refugia area. Furthermore, by offering the open-close system, rather than the permanent “no-take” zone, the fisheries refugia concept has a huge opportunity to be well-accepted by the local fishermen community and to be replicated for the other important fisheries commodities. Finally, the fisheries refugia-based management may serve as a management pilot project for the important fisheries commodities, especially in IMFA 711.

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TOWARD FISHERIES REFUGIA IN INDONESIA COASTAL WATER

PROJECT DESCRIPTION

The Fisheries refugia is known as a novel approach in fisheries management which, in principle, integrates fish stocks and their habitat management. The concept of fisheries refugia was introduced by GEF/UNEP as stated in the GEF/UNEP Regional Guidelines on the Use of Fisheries *Refugia* for Capture Fisheries Management in Southeast Asia. The guidelines that published as part of the ASEAN-SEAFDEC Regional Guidelines for Responsible Fisheries in Southeast Asia in 2006, has provided countries bordering the South China Sea and Gulf of Thailand a milestone and a clear policy support for the development of sustainable fisheries in Southeast Asia.

The initiative to establish a fisheries refugia system in the South China Sea was developed by SEAFDEC/UNEP/GEF through a regional project: “Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand” in collaboration with six countries bordering the South China Sea; Cambodia, Indonesia, Malaysia, Philippine, Thailand, and Vietnam. The specific project objective is ‘to operate and 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 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’.

The project has four components, are (1) Identification and management of fisheries and critical habitat linkages at priority fisheries refugia in the South China Sea and Gulf of Thailand; (2) Improving the management of critical habitats for fish stocks of transboundary significance via national and regional actions to strengthen the enabling environment and knowledge base for fisheries refugia management in the South China Sea and Gulf of Thailand; (3) Information Management and Dissemination in support of the national and regional-level implementation of the fisheries refugia concept in the South China Sea and Gulf of Thailand; (4) National and regional cooperation and coordination for integrated fish stock and critical habitat management in the South China Sea and Gulf of Thailand.

Indonesia has decided two potential priority areas for establishing fisheries refugia system are Bangka-Belitung Waters and West Kalimantan Waters which is part of Fisheries Management Area (FMA) 711 of Republic Indonesia. In term of fisheries management, Indonesia consists of eleven Fisheries Management Area, and FMA 711 encompasses the Karimata Strait, Natuna Sea, and the South China Sea, is a strategic fishing ground in Indonesia.

THE EXPERIENCE

- **Issue**

The fisheries sector plays important role in providing food for the nation, serve as a source of employment, income, and foreign exchange. Small-scale fisheries play dominant role in contributing fish for the domestic market and local consumption. On the other hand, landings for export are mostly derived from semi-industrial fisheries. Most inshore fish resources have been more intensively exploited than those offshore. Accordingly, fisheries in coastal and marine areas require good management that aims to rebuild resources and maintain the integrity of marine and coastal ecosystems.

Habitat in the coastal areas plays an essential role in the stock sustainability of marine fish, crustacean, mollusc or other species. In completing their life cycle, most of marine fish, shrimp,

squid are linked to critical habitats such as mangroves, coral reefs, seagrass beds, and estuaries. However, critical habitats have been threatened for decades due to human activities, including intensive exploitation in coastal areas. Therefore, there is crucial to integrate fish stock and habitat management in fisheries management to conserve fisheries resources and their habitat, improve the welfare of the fishers and achieve ecological and economic balance in sustainable fisheries development.

The fisheries refugia project implemented in Indonesia was conducted to develop recommendations in two administration areas, Bangka Belitung Province, and West Kalimantan Province, focused on two fisheries commodities, Squid and Penaeid shrimp. There were important issues to put as the main concern in this project implementation, fishing on the spawning stock and juvenile/pre recruits and habitat degradation.

Fishing on the spawning stock of squid in Bangka Water and shrimp in West Kalimantan may threaten the stock and trigger to growth overfishing of squid and shrimp stock. The broody squid are caught by the fishers mostly in October-November that is indicate as the spawning season of the squid. On the other hand, the same issue also faced by the shrimp resource in West Kalimantan, particularly in the project site, coastal around Padang Tikar, Teluk Batang, and Delta Pawan. The mature female of shrimp also being caught by the fishing gears during the spawning season, which identified around November to December.

Similar to the spawning stock, juvenile/pre recruit also threaten by the fisheries activities, particularly the small-scale fisheries in the coastal areas. Non-selective fishing gears used in both locations threaten juvenile stock of squid and shrimp, which may cause the growth-overfishing targeted fisheries commodities in their early-life phase or the growth phase Both recruitment and growth-overfishing activity produce a significant impact on the lower recruitment that existed in the fisheries area.

In addition, the critical habitat of squid and shrimp was indicated being degraded as impact of anthropogenic activities in coastal and mainland area. Degradation of critical habitat of squid and shrimp in the coastal area were caused by high sedimentation flux carried from the upper stream. This condition triggers coastal siltation and forces fishermen to fish more distance fishing ground. This condition triggers coastal siltation and forces fishermen to fish more distance fishing ground. Tin Bangka Belitung, the sediment source came from sea tin mining activities. The high sedimentation rate shown from the high Total Suspended Solid (TSS) value, was potentially covering essential habitats such as coral reefs and sea grass that important as squid egg-laying ground.

The issues provided a huge challenge in understanding the overlapping economic activity involved. Squid and shrimp fishing on both and the tin mining activity in the coastal area of Bangka Belitung were economic activities that have been operating for a long time. Creating ecological-economical balance management by considering the ecosystem-based for fisheries management was essential to overcome this challenge and resolve all the existing issues. The Fisheries Refugia concept implementation offers a comprehensive solution to achieve ecological and economic balance.

- *Fisheries refugia concept in Indonesian fisheries resource management*

The Indonesian government, through the Ministry of Marine Affairs and Fisheries, has the vision to secure 10% of the seawater area in Indonesia dedicated as a biodiversity and sustainable fisheries area. Currently, there were 377 marine conservation areas established in Indonesia to use as a role model in habitat management. West Kalimantan and Bangka Belitung, as the fisheries

refugia project area, are in the Indonesian Fisheries Management Area (IMFA 711). The Indonesian government has implemented a regulation regarding the number of catches allowed. According to MMAF decree No. 19/2022, the fisheries commodities allowed to catch in this area were 911.534 tons in total from nine important commodities such as big pelagic fishes, small pelagic fishes, demersal fishes, coral reef fishes, lobsters, crabs, penaeid shrimps, and squids. Implemented fisheries management in IMFA 711, through this note, was represented by two locations, Bangka Belitung and Wes Kalimantan.

The existing marine conservation area established by MMAF in Bangka Belitung was Momparang islands (124.320,70 ha) and Belitung waters (391.820,23 ha). Today, the marine tourism area of Tuing (7.372,50 ha) was still in the process of being designated. Tuing waters' designation as a protected area was due to its ecological functionality as the squid egg-laying area. The fishermen's community also found evidence of matured squid in Tuing waters which could be caught in a certain season. The operational lift net in Tuing waters also caught squid juveniles. This evidence supported that the Tuing waters play an important ecological role as spawning, egg-laying, and nursery area.

West Kalimantan Province belonging huge potency for marine resource sustainability along Karimata Strait. In this area, the established marine protection area was covering 2,06 million ha of sea area and 3,2 million ha of estuarine area consisting of several ecosystems, i.e., mangrove, coral reefs, and seagrass. Currently, the conservation efforts in this area focused on turtle protection, especially in Sebusus paloh village by protecting the coastline and 63 Km water area from the coast. The local government, to protect the turtle, has conducted monitoring and supported the diversification of the local fishermen's livelihood by introducing commercial commodities farming. These efforts were made through coordination between the NGOs and private sectors.

A social system empowered by local wisdom has the potency to support fisheries management. In Bangka Belitung Province, The traditional Melayu tribes in Tuing called Lom Tribe/ Mapur Tribe belong in correlation with the local folklore "Akek Antak". This folklore inspired and entrusted the tribe's culture to protect the seas and the geo-site metamorph of Tuing coast for hundreds of years. This local wisdom provided a positive impact in preserving fisheries' sustainability by implementing the "use-enough" acts on the use of natural resources. Practically, this local wisdom implied the fishermen's activities in these areas through the use of artisanal fishing vessels and fishing gear. The vessels were unequipped with the motor and used squid selective gears (74,85% selectivity). This local wisdom has been developed the fisheries resource sustainability.

RESULTS AND LEARNING

Fisheries refugia for Penaeid Shrimp in Wes Kalimantan

Shrimp production fluctuated between 2010 to 2020 and showed an increasing trend (MMAF, 2021). Shrimp fisheries in West Kalimantan in 2020 contributed 20% to the total shrimp production in IMFA 711. In West Kalimantan, two shrimp species are known for their economic importance *Penaeus merguensis* and *Penaeus indicus*.

Nursery areas for the penaeid shrimp population existed on estuarine waters and adjacent mangrove stands; 92% of shrimp caught in this area were in the larval and juvenile phases. Investigation regarding water and mangrove ecosystem quality resulted that this area being suitable for the nursery area. Thus, this area was recommended to be a fisheries refugia area for the protection of shrimp larvae and juveniles.

The penaeid shrimp nursery habitat in West Kalimantan was characterized by typical 4-40% mangrove coverage, consisting of 15-39 species of mangrove vegetation. The average salinity of habitat recorded from the studies was range from 27-34.1 ppt, pH was 32 – 8.32, and water turbidity level ranged from 0.7 – 28.7 NTU. The shrimp juvenile was found in high abundance in several locations, i.e., Padang Tikar (Kubu Raya District), Teluk Batang (Kayong Utara District), and Delta Pawan (Ketapang District), on 5-10 m water depth and 4 miles to the sea.

The expansion of the mangrove forest area on the Kayong Utara coast has increased from 41,500 Ha in 2015 to 45,087 Ha in 2019. This ecosystem rehabilitation supported this area as a nursery habitat for penaeid shrimp. Nevertheless, numerous anthropogenic activities were critical threats to the shrimp juveniles' survival rate. This might cause by non-selective fishing gear, mangrove deforestation, and water transportation.

The spawning area plays a vital role in the shrimp life cycle for the protection of matured female shrimp. An individual female banana shrimp could produce 125.000 – 972.000 eggs in a single spawning event. In Kubu Raya and Kayong Utara coastal water, between 20-30 m in depth, was expected as the existing spawning ground for penaeid shrimp. The evidence was supported by 60% of banana shrimp and 22% of white shrimp caught in these areas were in ripped gonadal condition. The spawning season was identified between November to December. The higher survival rate of the shrimp in the early-life phase would increase the success rate of shrimp recruitment.

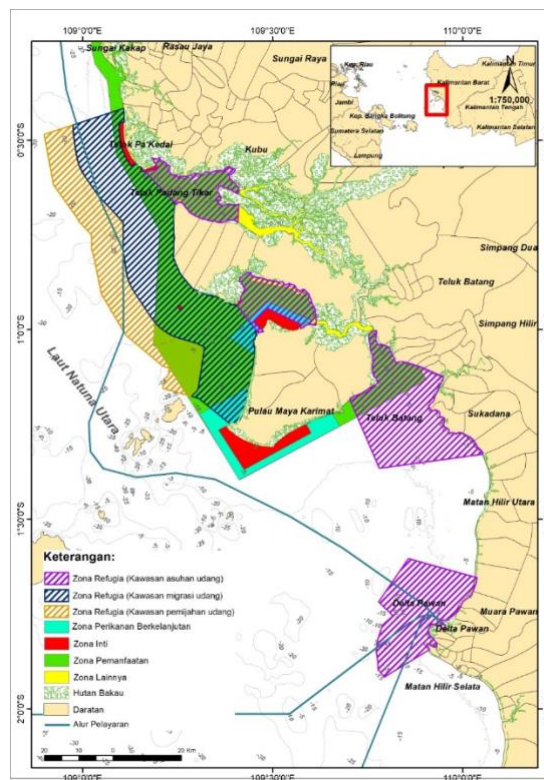


Figure 1. Recommended shrimp fisheries refugia area in West Kalimantan

According to the study result, the delineation of shrimp fisheries refugia candidates in West Kalimantan has overlapped with the established conservation area by MMAF decree No 89/ 2020 (figure 1). The designation of the conservation area has considered the results of several studies which identified the area as an essential habitat for Penaeid shrimp. The proposed refugia area for shrimp fisheries refugia areas in West Kalimantan waters also considers several aspects,

namely the biological aspects of shrimp, habitat suitability, socio-economic aspects, and well-established fisheries management.

The fisheries refugia area in West Kalimantan Province was recommended to cover 4,094.32 Km² (409,432 Ha) by including several coastal areas on site, such as Padang Tikar (Kubu Raya District), Dusun Besar, and Teluk Batang (Kayong Utara District), as well as Delta Pawan (Ketapang District). Therefore, several recommendations were proposed for shrimp fisheries refugia management:

- Propose 4.094,32 km² (409,432 Ha) as penaeid shrimp fisheries refugia area around Kubu Raya District, Kayong Utara District, and Ketapang District (Gambar 5).
- Propose shrimp fishing control through,
 - a) Reduction of 20% of existing operational shrimp fishing gears (bottom trawl and trammel net)
 - b) Rearrangement passive shrimp fishing gears
 - c) Implementation of the closed fishing season in November and December.
- Propose shrimp habitat management through rehabilitation of mangrove forests, increment of public awareness regarding eco-friendly fishing gears, protection of shrimp habitat, and rearrangement of the water transportation route in fisheries refugia area.
- Propose the improvements of social, economic, and management aspects through,
 - a) Improvements in system and quality for penaeid shrimps' fisheries data collection
 - b) Intensification of socialization and supervision post-to-regulation implementation
 - c) The active role of community business group improvements
 - d) Establishment of community monitoring groups
 - e) Strengthening local wisdom that essential to preserve
 - f) Arrangement of the vessels fuel distribution process to be organized and scheduled
- Regulating marine spatial utilization permits include:
 1. Re-arrangement of permits for fishermen with passive fishing gears (including the local community), based on Government Regulation No 21/2021 regarding the Implementation of marine spatial planning.
 2. Propose marine spatial planning activities approval in accordance with the Minister of Marine Affairs and Fisheries Decree Number 28/2021
- Propose monitoring activity for assigned fisheries refugia areas which may be conducted every 3 (three) years accompanied by an evaluation every 6 (six) years since the settlement of the regulation.

Fisheries refugia for Squid in Bangka Belitung

The critical phase in the squid's life cycle was the mature adult, in which they were ready to spawn, and the early life phase of the squid. In these phases, squid will develop an association with a specific habitat to succeed in recruitment or reproduction. These habitats were essential as spawning, egg-laying, and nursery habitat. Disruption in the critical phase habitat may disrupt resource sustainability.

Based on scientific consideration, an area of 1,529.097,93 ha, consisting of 1,212,572.60 ha of spawning area and 316,525.33 of egg-laying area, was recommended as potential Fisheries Refugia areas for squid. The proposed spawning area consisted of four sub-area, i.e., Tuang water,

Dua island, Karang Sembilan, and Karang Timah. The proposed egg-laying area covered coastal water on the northern side of Bangka Island, coastal water of Bangka, coastal water of Pangkal Pinang, and coastal water of Bangka Tengah, Kelapa Island, Dua Timur Island, Dua Barat Island, northern water of Dua Island, Karang Jagur, Karang Mejan, Karang Sembilan, and Semujur Island water and Gusung Asem (Figure 2). Furthermore, from those potential squid fisheries refugia areas, a single cluster of priority areas was proposed as squid refugia covering 157.668,35 ha consisting of 148.087,08 ha of spawning area and 9.581,27 ha of nursery area (Figure 2).

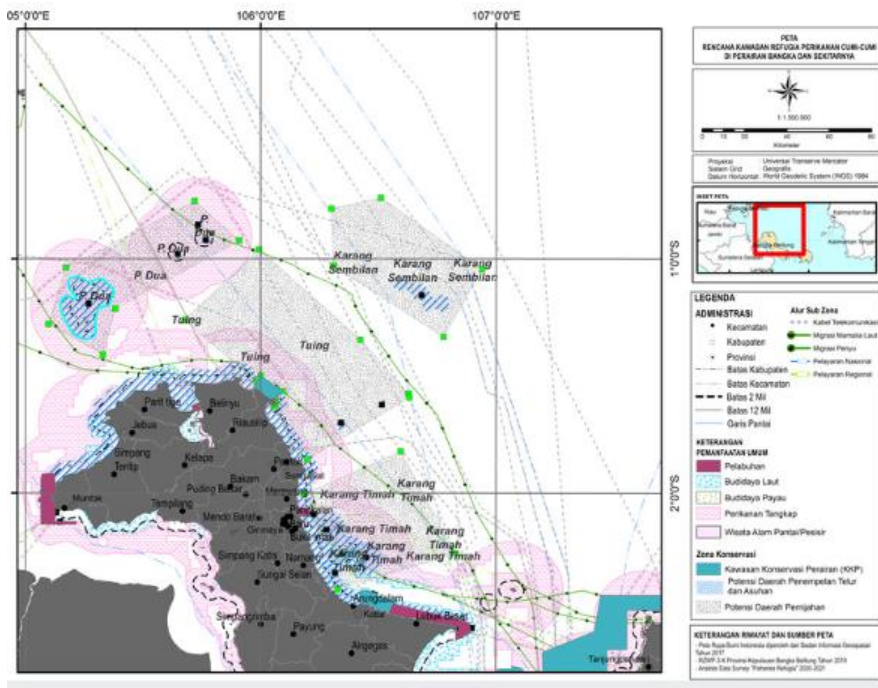


Figure 2. Potential area recommended for squid fisheries refugia in Bangka Belitung Province.

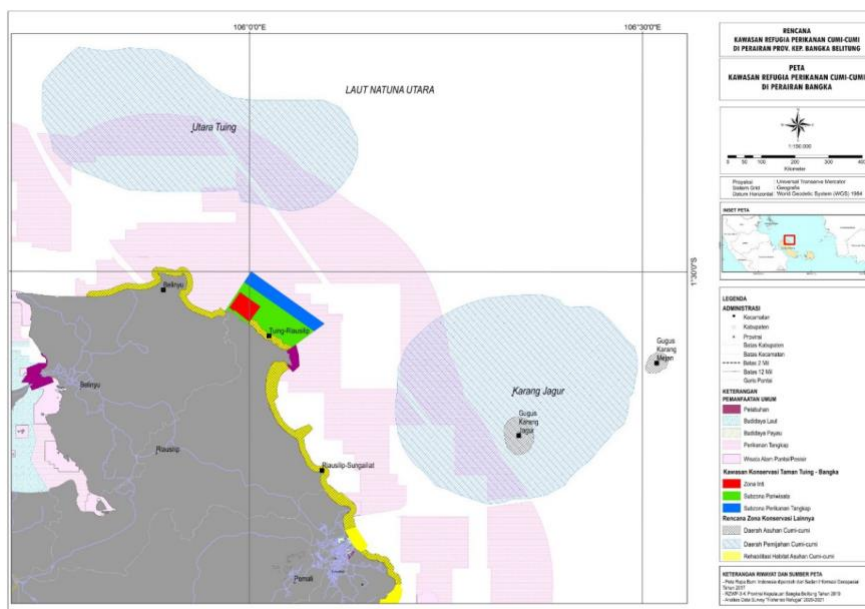


Figure 3. Priority area recommended for squid fisheries refugia in Bangka Belitung Province.

Therefore, several recommendations were proposed for squid fisheries refugia management:

- Proposing potential squid refugia area for 1,529,097.93 ha covering Tuing waters, Dua Island, Karang Sembilan, Karang Timah, 4 miles of coastline on the western and northern side of Bangka Barat, Bangka coast, pangkal pinang coast, Bangka Tengah Coast, Kelapa Island, Karang Jagur, Karang Mejan, and Semujur Island, and Gusung Asem waters (Figure 3).
- Implement fisheries refugia to increase the squid management effectivity through:
 - a) Broody squid fishing management through an open-closed fishing mechanism from April to June and October to November to be implemented in the designated spawning area.
 - b) Regulate squid juvenile fishing by limiting operational lift net and squid juvenile fishing areas as well as prohibit the lift net operation in the designated nursery area.
- Conduct coastal habitat rehabilitation through physical (hard structure) and biological (mangrove planting) engineering to trap the sediment.
- Provide alternative fishery-based livelihood for fishermen during the closed fishing season implementation.
- Encourage the establishment of policy regulations on the use of squid resources at the local level based on independent local wisdom.

REPLICATION

Fisheries management based on a critical phase of the life cycle (Fisheries refugia) was a breakthrough in marine resource management potentially to be implemented and produce a balance between economic and ecological interests. The economic stability of the related community in Fisheries refugia becomes the core consideration to ensure the ecology functionality and resource sustainability. Management approaches based on the fisheries refugia concept implementable in Indonesia was an open-close system on the spawning season, regulating allowed fishing gears, fishing gear and fishing ground management, and preservation of critical habitat.

SIGNIFICANCE

The fisheries refugia activities in Indonesian fisheries management contributed to understanding the importance of habitat-fish interaction during the critical phase. The information regarding critical habitat (spawning ground and nursery ground) became essential information in constructing a management plan in Indonesia. Nevertheless, the implementation hasn't been holistically described.

The fisheries refugia project served as one of the management pilot projects aimed at comprehensively managing the resource and its habitat to ensure resource sustainability, managed spatial area, and the active involvement of relevant stakeholders. Through this project, several recommendations and a guideline were proposed to the authorized institutions to achieve the expected outcomes. They could be used as a reference in strengthening fisheries management on IFMA 711 and the local governments.

REFERENCES

- Naamin, N. 1984 Population dynamics of banana prawn (*Penaeus merguensis* de Man) in the Arafura Sea, and an alternative management plan. Bogor Agricultural University, Bogor, Indonesia, 256 p. Ph.D. Thesis. (In Indonesian)

- RIFE. 2015. Report on the Study of Protection technology through refugia of shrimp Penaeid in West Kalimantan

KEYWORDS

- ◆ Fisheries Refugia
- ◆ Indonesia
- ◆ Ecosystem Approach
- ◆ Shrimp
- ◆ Squid

ANNEX 15: GEF IW-EXPERIENCE NOTES

C: THE ESTABLISHMENT OF FISHERIES REFUGIA IN MALAYSIA

**Abstract:**

The Fisheries Refugia project in Malaysia aims to promote sustainable use of fish habitats and biodiversity through the establishment of two refugia sites for the tiger prawn and mud spiny lobster in Kuala Baram and Tanjung Leman, respectively. The project is coordinated by the National Fisheries Refugia Committee, the National Scientific and Technical Committee, and two site-based Fisheries Refugia Committees. The membership of the National Fisheries Refugia Committee includes stakeholders from various agencies such as the Ministry of Agriculture and Agro-Based Industry, Department of Fisheries Malaysia, and State Planning Unit Sarawak. The main tasks of the National Fisheries Refugia Committee are to focus on matters relating to the planning and operational management of priority refugia sites. While the Fisheries Refugia Committees are responsible for the day-to-day planning and management of their respective refugia sites. The main drivers that have led to the decline of fish resources in Malaysia include overfishing, habitat destruction, pollution, and unrestricted human development activities

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The establishment of Fisheries Refugia in Malaysia

PROJECT DESCRIPTION

Under the fisheries refugia project in Malaysia, the national coordination mechanism consisted of 3 levels, namely the National Fisheries Refugia Committee, the National Scientific and Technical Committee and two site based Fisheries Refugia Committees at Tanjung Leman and Kuala Baram (Figure 2). The Focal Person for the National Fisheries Refugia Committee is the Deputy Director General of Fisheries Malaysia while the Focal Person for the National Scientific and Technical Committee is the Director of Capture Fisheries Division the Fisheries Research Institute. The refugia project also receives technical and financial inputs from the Regional Refugia Project Steering Committee based in Bangkok, Thailand.

The membership in the National Fisheries Refugia Committee consisted of stakeholders from various agencies such as the Ministry of Agriculture and Agro-Based Industry, Department of Fisheries Malaysia, State Planning Unit Sarawak, Johor and Pahang State Economy Development Units (UPEN), Fisheries Research Institutes, Johor, Pahang and Sarawak States Fisheries Departments, Malaysia Maritime Enforcement Agency (MMEA) and others.

The main task of the National Fisheries Refugia Committee is to focus on matters relating to the planning and operational management of priority refugia sites. These stakeholders will assist with the identification of proposed measures for the fisheries sector's sustainable use of fish habitats and biodiversity for incorporation in Malaysia's national fisheries policy [3].

Fisheries Refugia Committees consisted of representatives from the Fisheries District Offices, local Fisherman Associations, District Fisheries Development Authority (LKIM), District Office, local enforcement authorities and trawler associations. Their main tasks are to delineate boundaries and planning of the formal designation of fisheries refugia sites, developing community-based management plans and the day-to-day planning and management of their respective refugia sites [3].

Two refugia site projects was chosen and will be to established in the 2023, which are in Kuala Baram for the tiger prawn and Tanjung Leman for the mud spiny lobster.

THE EXPERIENCE

Issue

The status stock of fisheries in the worldwide face a common outlook which is overfishing or over exploited [1]. The uses of destructive/unsustainable fishing gears and practices is one of the cause due to overfishing [2, 3]. Marine habitats such as coral reef, mangrove and seagrass which promote and protect the fish population face severe threats from destruction due to destructive fishing gears, widespread pollution and unrestrictive human development activities [4]. The fishery management methods such as fishing

effort control, prohibited gears, vessel size and engine capacity limits may not be adequate to overcome the declining of the fish resources in Malaysia [2,4].

The exploitation of tiger shrimp in Sarawak had been going on since early 70s after the introduction of trawl gear. Since then the fishing activity had increased with annual catches of 19,000 tonnes until 1990s (Figure 1). The record was then fluctuated drastically with the lowest catch at 11,000 tonnes in 1998 (Rajali & Arshad, year unknown). According to Siow et al. (2020), declining number of tiger shrimp landing of tiger shrimp was reported between from 2008 to 2018 due to unrestricted coastal development.

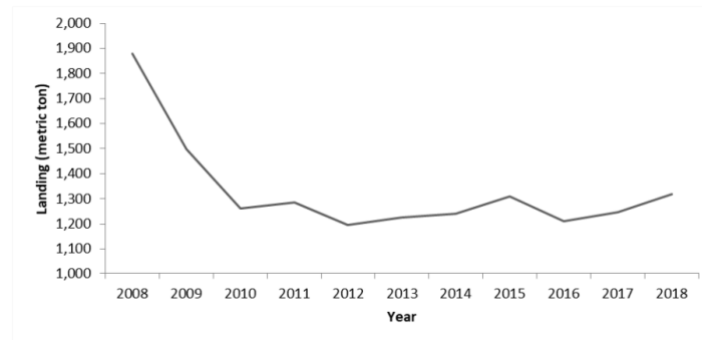


Figure 1. Annual landing of *Penaeus monodon* recorded between year 2008 to 2018 (Source: Siow et al., 2020)

Based on the landing of the spiny lobster in Malaysia, the declining trend since early 2000's had triggered the push towards conserving the lobster population in Malaysia. Figure 2 shows landing of the spiny lobster in the east coast of the Peninsular Malaysia. Habitat degradation, illegal fishing activities, and over-fishing are the key drivers that deteriorated the lobster population in the area. One of the key challenges in conserving the lobster population in the area is the overlapping of traditional fishing grounds and critical habitats of the lobster. The conflict of interest among the stake holders has presented a complicated scenario in the management effort for this fishery (Mohd Ghazali, 2016; Siow et al., 2020).

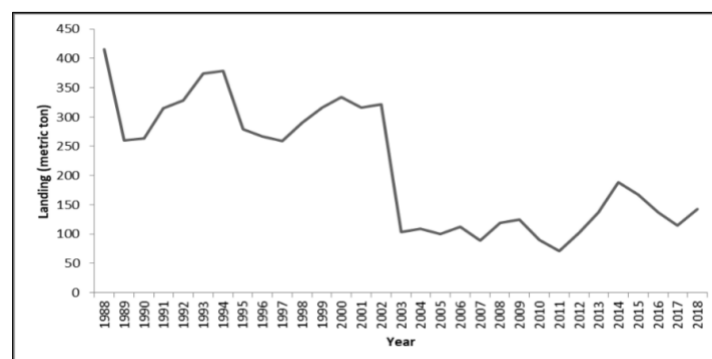


Figure 2. The landing trend of spiny lobsters in the east coast of Peninsular Malaysia during a thirty-year period (1988 – 2018) (Source: Siow et al., 2020)

Due to the characteristics of exploitation in both species, a new fisheries management approach that focuses on protecting critical stages in the life cycle of lobster and spiny tiger shrimp is in the concept of fishery refugia introduced that focuses on specific seasons in its management.

Addressing the Issue

To address the issues, the project intended to:

- The refugia site of Tiger Prawn (*Penaeus monodon*) has been identified based on past and current research findings (Nurridan, 2021b; Hadil, 2007; Hadil & Albert, 2001) with the integration of knowledge between *P. monodon* life-cycle and its critical marine habitats. The proposed site encompasses the marine waters off Kuala Baram and the brackish riverine mangrove areas of the adjoining rivers: Batang Baram, Sungei Pasu, Sungei Lutong, Sungei Miri, Sungei Bakam and Sungei Sibuti.
- The 171,700 ha Spiny Lobster (*Panulirus polyphagus*) mud sensitive Refugia site was identified based on research findings (Figure 4) by researchers from the Fisheries Research Institute as soon as lobster was selected as a target species in the Refugia study.
- Conduct a socio-economic survey to gauge the response of fishermen in Tanjung Leman Johor and Kuala Baram Sarawak and measure their understanding of the refugia opened for both species.
- The establishment of a refugia requires the combined effort from various stakeholders. Public participation and the active involvement of community players are critical to ensure the successful implementation and sustainability of any refugia management plan. Therefore, the main stakeholders will be the fishermen community, a critical player that will play a vital role in ensuring the success of this refugia project.
- To facilitate the establishment of refugia management in both areas, the Malaysian Fisheries Department has appointed a consultant. A series of meetings with stakeholders were held by consultants to provide a deeper understanding of the refugia and also provide guidance through public awareness in the implementation of the refugia when it is operational.
- Formulate policy guidance for better management of the impact of fishery on selected species in refugia or sensitive areas.
- The final presentation of the refugia management plan by the consultant was held to inform the Department of Fisheries about the Department of Fisheries' new initiative in strengthening the fisheries biodiversity resources in line with the National Agrofood Policy 2.0 (DAN 2.0). The consultant also able to presenting of

findings and further obtains direct feedback from departments and others agencies involved in the formation of refugia management.

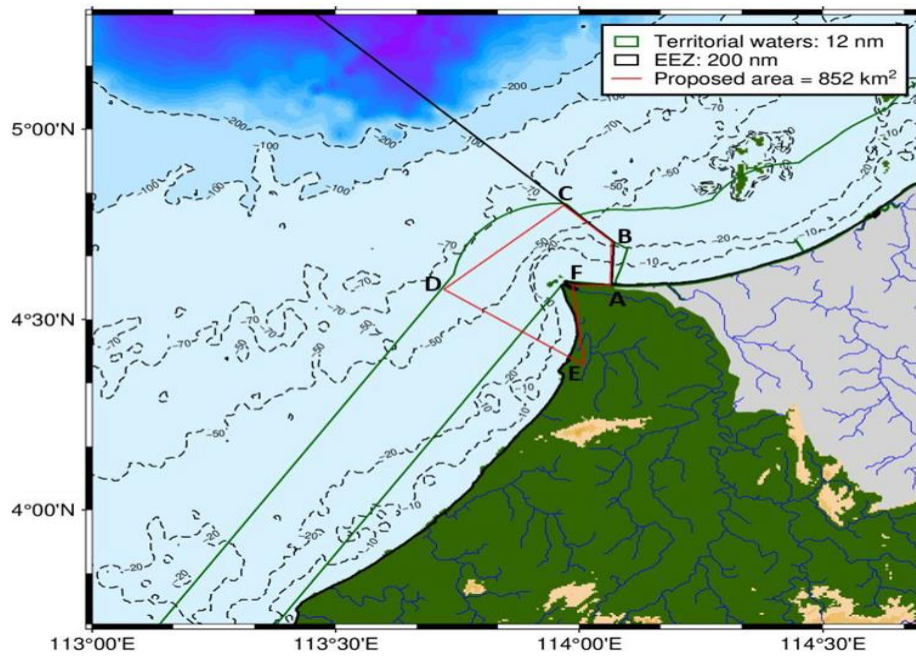


Figure 3: the location of the proposed area for tiger prawn refugia program with the total area of approximately 85,200 ha in Kuala Baram, Miri, Sarawak (Source: Nurridan, 2021a).

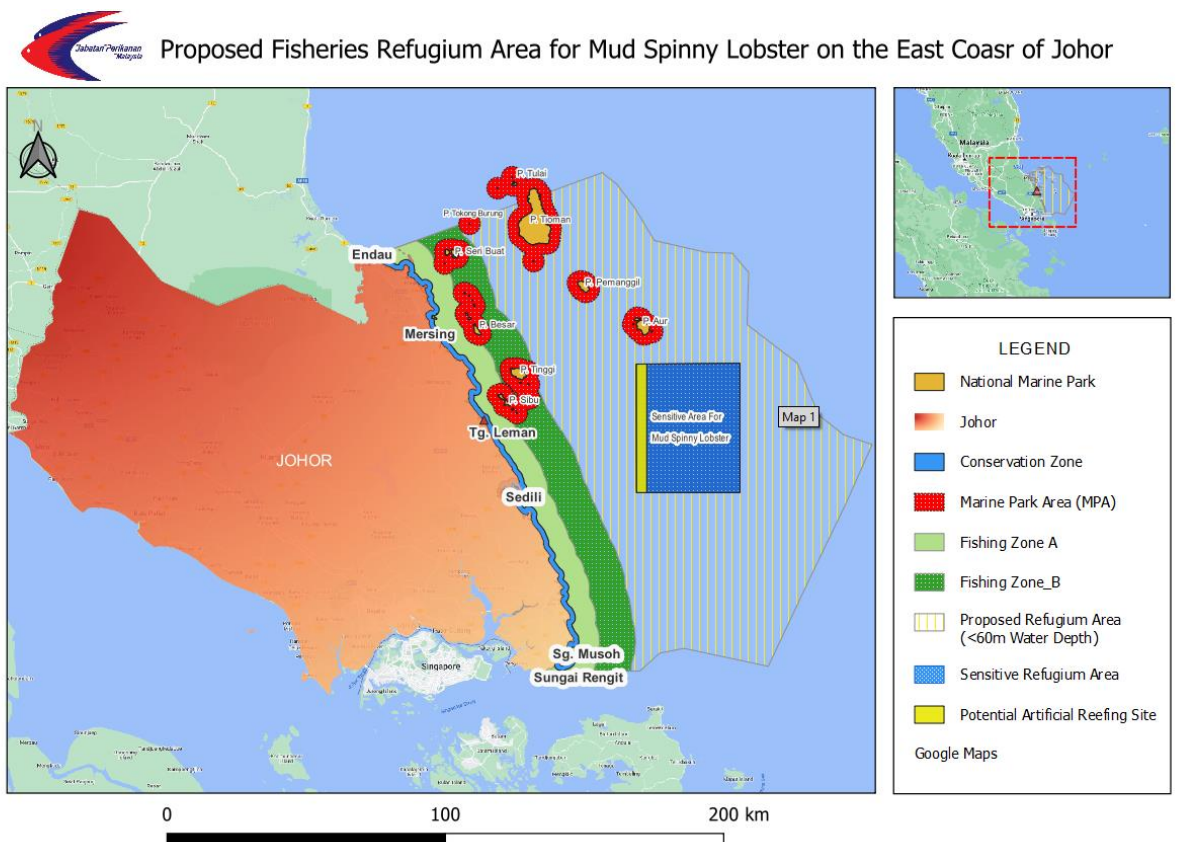


Figure 4: Proposed area of refugia and off-season area for lobster catch

RESULTS AND LEARNING

As a results and learning, the formation process of refugia management is in the final stage and is expected to be finalized and able to operate as a complete refugia with management measures in early 2023. Success up to the final stage in the formation of refugia management is illustrated through addressing the issue discussed earlier. Cooperation between researchers and management in the Department is the main key in the formation of the basis of refugia management.

REPLICATION

Since this is the first time that Malaysia will implement a refugia program involving 2 species, namely lobster and tiger prawn, all experience in carrying out the activity until successful needs to be recorded to ensure that this method can be used for the implementation of refugia activities for other species. Also, the same method can be used by any country bordering Malaysia that will carry out refugia activities on the same species.

REFERENCES

- Alias, M., Nurhanida, D., Abd Rahman, M. and Rajendran, K. 2000. Distribution, habitat and life cycle of the mud spiny lobster *Panulirus polyphagus* in the east coast of Peninsular Malaysia Nat. Fish. Symp. 31 Oct – 2 Nov 2000 Johor Bahru, Malaysia.
- Noor Hanis, A.H. and Siow, R. 2019. Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand, Report on Lobster Resources and Fisheries in Sedili, Johor. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/MY16, 10 p
- Nasuchon, N., and Charles, A. 2010. Community involvement in fisheries management: Experiences in the Gulf of Thailand countries. *Marine Policy*, 34(1), 163–169.

KEYWORDS

- South China Sea
- Fisheries Refugia
- Mud spiny lobster
- Malaysia
- Engagement

ANNEX 15: GEF IW-EXPERIENCE NOTES

D: COMMUNITY ACCEPTANCE OF FISHERIES REFUGIA IN THE PHILIPPINES

**ABSTRACT**

The implementation of the fisheries refugia project in the Philippines started in 1997 to 2022. Three pilot sites were identified and established in Bolinao, Pangasinan, Coron, Palawan, and Masinloc, Zambales, with an approved Fisheries Refugia Site Management Committee for every site. The introduction of Fisheries Refugia (FR) concepts during our inception meeting in the three priority sites created many questions from fisherfolks and stakeholders who wanted more information on the difference between fisheries refugia, marine protected areas, fish sanctuaries, and marine parks, among others. Upon a series of public consultations and information drives, the fisherfolk and stakeholders understood the concepts of fisheries refugia and its objectives and the management measures that can be applied with high approval and acceptability. The Bureau of Fisheries and Aquatic Resources, through Fisheries Office Order No. 335 (FOO), approved the “Implementation of the Guidelines on the Establishment and Operation of Fisheries Refugia in the Philippines,” With this premise, the concept of fisheries refugia can be replicated in other marine coastal areas in the Philippines.

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COMMUNITY ACCEPTANCE OF FISHERIES REFUGIA IN THE PHILIPPINES

PROJECT DESCRIPTION

The GEF-UNEP supported project “Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and the Gulf of Thailand” (Fisheries Refugia Project) is implemented by the Southeast Asian Fisheries Development Center (SEAFDEC) as the regional executing agency. The participating countries are—Cambodia, Indonesia, Malaysia, Philippines, Thailand, and Viet-Nam, with 15 priority sites in the region. In the Philippines, the fisheries refugia project started from 2017 to 2022 with the three priority sites identified as follows Bolinao, Pangasinan, Coron Palawan, and Masinloc, Zambales (Figure 1). The National Fisheries Research and Development Institute (NFRDI) is the country’s project executing agency in partnership with the Bureau of Fisheries and Aquatic Resources.

The project provides a new strategy to ensure the protection of the critical stages in the life cycle - spawning population and the juvenile (from fish eggs to juvenile/fingerling) by integrating the protection of the habitat where the fish spawn and the nursery ground, the area where the fish eggs and larvae are drifted by the current (sink). This is generally called the “source and sink” dynamics of the fisheries species. One of the project's primary goals is to provide guidelines for the duplication of lessons learned from the above pilot areas for coastal municipalities to protect and manage fisheries resources in their jurisdictions. Further, this is consistent with specific provisions of the country’s Fisheries Code that mandate the local government units to enact ordinances for the management of areas like fisheries refugia in their waters.

In the course of project implementation, stakeholder engagement through several consultations, workshops, training, and site meetings was promoted. The Consultative Workshop Meeting was convened to identify and document threats from/to fisheries and critical habitats at the project *refugia* sites. The importance of the local or traditional knowledge of the fisherfolk in boundary delimitation was recognized during discussions and the finalization of demarcations. In particular, it also highlighted during the dialogues that the fisherfolk’s traditional knowledge is one best base/source in locating spawning areas as well as nursery grounds for juveniles in their waters. These were then validated by actual fisheries surveys and related studies. The fisherfolk, therefore, is invaluable in gathering information on the site, size, and temporal distribution of the different fisheries in their respective fishing grounds. Thus, this strengthened community acceptance, especially for the fishing communities, which was one of the critical factors that made the project implementation successful.

Table 1. Details of the 3 pilot sites

Fisheries Refugia Sites	No. of Hectares (ha)	Priority Species	Type of Habitat	Habitat in Hectares (ha)
Bolinao, Pangasinan	99.8	<i>Siganids</i> spp.	Seagrass	1,084.58
Coron, Palawan	163.20	<i>Caesio cuning</i> <i>Decapterus muroadsi</i>	Mangroves	229.56
Masinloc, Zambales	120.69	<i>Pterocaesio tessellata</i> <i>Sadinella fimbriata</i>	Corals	1,602.20

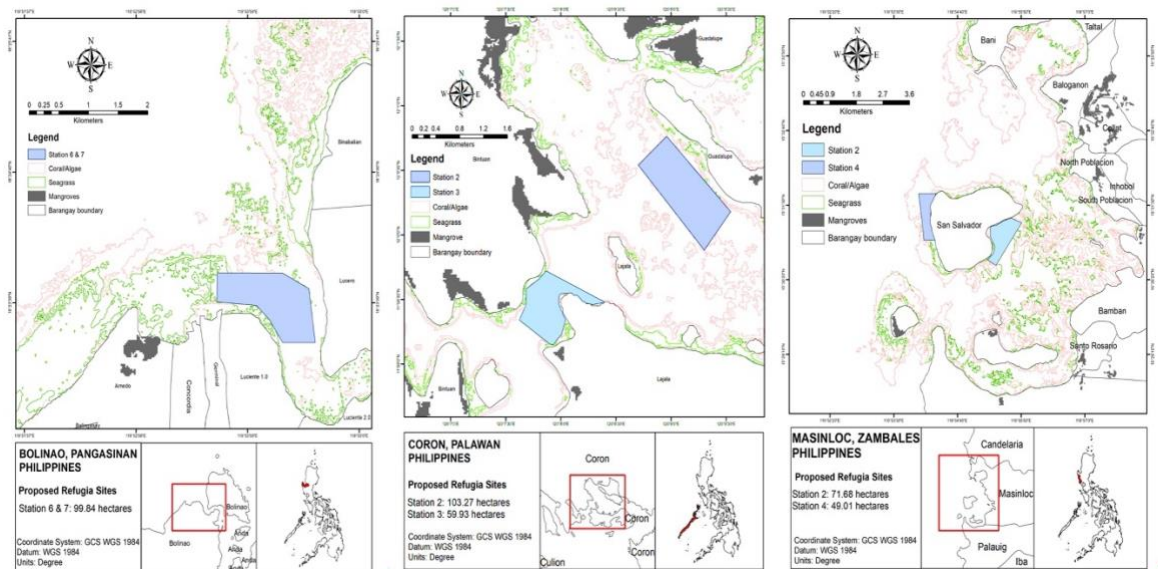


Fig. 1. Map of the Fisheries Refugia sites in the Philippines

THE EXPERIENCE

• ISSUE

The South China Sea offers abundant valuable fisheries resources economically significant to the surrounding states, providing food and employment to millions of people. Several fisheries management measures, conservation tools, and laws are enforced in marine coastal waters in the Philippines, like Marine Protected Areas (MPAs), Fish sanctuaries (FS), and Marine Parks (MP), among others. With the introduction of the Fisheries Refugia (FR) concept during our inception meeting in the three priority sites (Figure 2), the fisherfolk and stakeholders kept on asking valid questions. Some questions raised included: “What is the difference between FR and MPAs, FS, and MP?” “Are they preventing us or limiting us from fishing activities?”; and “What are some of the benefits the project can provide?”. Thus, to provide alternative measures for management, ensure the social well-being of users/fishers, and making environmentally sound actions, the project introduced the Fisheries Refugia concept.

• ADDRESSING THE ISSUES

During the launching of the fisheries refugia project in the three priority sites, various consultation meetings and information drives (Figures 2 and 4) with the key players were undertaken. Further, the stakeholders in the local government units were convened to discuss and promote the concept of fisheries refugia in the pilot sites. Upon a series of public consultations and information drives, the fisherfolk and stakeholders were capacitated with the concepts of fisheries refugia, its objectives, and the management measures that can be applied with high approval and acceptability.

Aside from consultation and information drives, the fisheries refugia project addressed some of their capacity-building needs. During the project implementation, a training on the Ecosystem Approach to Fisheries Management (EAFM) and Fisheries Law Enforcement Training was conducted as needed. The fisheries refugia project also distributed life-saving equipment like life vests, life rings, and rash guards to fishermen and law enforcement officers/volunteers (*Bantay Dagat*) as part of Information Education Communication (IEC) materials (Figure 3).



Fig. 2. Fisheries Refugia Site Management Committee Meeting in Bolinao, Pangasinan



Fig. 3. Distribution of life vests to the fisherfolk of Masinloc, Zambales, as an IEC material



Fig. 4. Information-drive activities on the fisheries refugia concept in the 3 priority sites

RESULTS AND LEARNING

Fisheries Refugia is defined as “Spatially and geographically defined marine or coastal areas in which specific management measures are applied to sustain important species (fisheries resources) during the critical stages of their life cycle, for sustainable use”(UNEP 2005). With this principle, The NFRDI conducted baseline data collection to identify priority species that are site-specific through fisheries landing and ichthyoplankton surveys to determine the spawning and nursery grounds. Similarly, reproductive biology was carried out on the priority species to verify their gonad maturity and assess the species’ spawning season for proper policy recommendations.

The results of the fish eggs and larvae assessment in the 3 priority areas provided information on the spawning and nursery refugia and were used by local government units to determine/identify the fisheries refugia sites. The proposed fisheries refugia in the three (3) areas (Bolinao, Coron, and Masinloc) were presented and approved during the site management committee meetings. Furthermore, the final draft of the Fisheries Management Plan and National Action Plan was presented during the Fisheries Refugia Site Management Committee meetings for approval.

Establishing and operationalizing fisheries refugia are essential in integrating fisheries and habitat management, ensuring sustainability in fishing and the livelihood of the coastal communities.

REPLICATION

The principles and concepts of the fisheries refugia project can be replicated in other coastal areas in the Philippines. The Fisheries Office Order (FOO No. 335) issued by the BFAR entitled, "Implementation of the Guidelines on the Establishment and Operation of Fisheries Refugia in the Philippines," mandates the municipal or city government to enact MFOs declaring demarcated fisheries areas, closed season, MPAs, fish refugia and sanctuaries, fishery reserves, and environmentally critical areas.

The fisheries refugia project should be implemented and promoted at the grassroots level to the local communities or fisherfolk organizations for better success.

SIGNIFICANCE

Establishing and operating fisheries refugia in the 3 sites is a crucial step towards conserving fishery resources by protecting the prioritized fish commodities' critical life stages (spawning and nursery refugia). The fisheries refugia can be replicated in other marine coastal areas as a new tool for integrated fisheries and habitat management.

REFERENCES

UNEP. 2005. Reversing environmental degradation trends in the South China Sea and Gulf of Thailand. Report of the Fifth Meeting of the Regional Working Group on Fisheries. UNEP/GEF/SCS/RWG-F.5/3

KEYWORDS

South China Sea
Gulf of Thailand
Fisheries Refugia
Stakeholder engagement
Ecosystem approach

ANNEX 15: GEF IW-EXPERIENCE NOTES

E: ESTABLISHMENT AND OPERATION OF FISHERIES *REFUGIA* IN THAILAND**ABSTRACT:**

Establishment and operation of fisheries *refugia* in Thailand are the national-level activities of the regional project under SEAFDEC/UNEP/GEF aim at establishing the mechanisms for effective cross-sectoral consultation and coordination, particularly in terms of the identification and designation of fisheries *refugia* for fisheries management in order to address the overlapping or conflicting mandates between different sectors concerning fisheries and environment, where internal mechanisms for managing the impacts of fishing practices on habitats and the physical environment do not exist. The results showed that Thailand has established and operated two fisheries refugia and earned experience in fisheries management via fisheries refugia, which is entirely based on the ecosystem approach to fisheries management. The activities have addressed the issues regarding the sustainable use of fisheries resources and the participation of multi-sectoral sectors and stakeholders, which mitigate tension between fishing and the environment. For replication of the experience, the priority-specific areas of learning and best practices are stakeholder engagement, cross-sectoral coordination, evidence-based planning, and application of fisheries *refugia* management models and strategies. The significance of this experience is its first time of representing a GEF IW project in Thailand which has contributed to the integration of fisheries and environment sectors for fisheries and coastal habitat management in the waters of the South China Sea marine basin of Thailand.

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Establishment and Operation of Fisheries *Refugia* in Thailand

PROJECT DESCRIPTION

Establishment and Operation of Fisheries *Refugia* in Thailand are the national-level activities of the SEAFDEC/UNEP/GEF Project on Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and the Gulf of Thailand. It's aligned with GEF-5 IW Strategic Priority 2: catalyse multi-state cooperation to rebuild marine fisheries in the South China Sea and Gulf of Thailand Large marine ecosystems, and specific outcome 2.1: implementing the fisheries component of the approved South China Sea Strategic Action Programme (SCS SAP). The initial duration of the project is 4 years during 2017-2020 and extended 2 years until 31 December 2022.

Longer-term goals of the project in Thailand are 1) To build the resilience of fish stocks of transboundary significance to the effects of high and increasing levels of fishing effort; 2) To improve the understanding amongst stakeholders, including fisherfolk, scientists, policy makers, and fisheries managers, of ecosystem and fishery linkages, as a basis for integrated fisheries and ecosystem/habitat management; and 3) To build the capacity of fisheries departments to engage in meaningful dialogue with the environment sector regarding the improvement of fisheries and management of interactions between fisheries and critical marine habitats

Its objectives are 1) Identification and management of fisheries and critical habitat linkages at priority fisheries *refugia* in Thailand; 2) Improving the management of critical habitats for fish stocks of transboundary significance via national actions to strengthen the enabling environment and knowledge-base for fisheries *refugia* management in Thailand; 3) Information management and dissemination in support of national-level implementation of the fisheries *refugia* concept in Thailand; and 4) National coordination for integrated fish stock and critical habitat management in Thailand.

The outcomes for each of the above objectives are 1) Reduced stress on fish stocks and coastal habitats via improved national management of key threats to fisheries and critical habitat linkages in Thailand; 2) Increased institutional capacity in the country for the designation and operational management of fisheries *refugia* via the transformation of enabling environments and the generation of knowledge for planning; 3) Strengthened knowledge management and information sharing and access for enhanced uptake of good practice in integrating fisheries management and biodiversity conservation in the design and implementation of fisheries and environmental management systems, including Marine Spatial Planning; and 4) Cost-effective and efficient coordination of national and regional level cooperation for integrated fisheries and environmental management.

THE EXPERIENCE

Issue

Fisheries are critically important from the perspectives of food security and export earnings in Thailand, with high levels of fishing effort. Accordingly, all inshore waters of the South China Sea basin of Thailand are subject to intense fishing pressure. Growing global demand for fisheries products, coupled with strong coastal community dependence on fisheries, is driving continued increases in fishing capacity and effort. The obvious impediment to the reduction of inshore fishing efforts is that small-scale operators are often entirely dependent on fish for income, food, and well-being. This has resulted in the situation of stocks of nearly all important species being fully fished or overexploited.

The situation of high fishing pressure and declining fisheries resources has contributed to the adoption of unsustainable fishing methods to maintain catch and increase incomes in the short term. Inshore fishing pressure has been identified as a significant cause of the degradation and loss of coastal habitats in Thai waters of the South China Sea.

With fish production being linked to the quality and area of habitats and the heightened dependence of coastal communities on fish, a need exists in Thailand to improve the integration of fish habitat considerations and fisheries management in the country. The dilemma for the fisheries and environment sectors is that conservation of habitat does not necessarily result in increased fish stocks while lowering fishing effort does not necessarily result in the improvement of habitat, given the complexity of the key threats to fish stocks, fish habitats, and associated biodiversity in Thailand waters of the South China Sea.

In terms of environmental governance and management, the environment and fisheries are treated as separate sectors for planning and management purposes leading to the overlapping or conflicting mandates between different ministries concerning fisheries and environment, where internal mechanisms for managing the impacts of fishing practices on habitats and the physical environment do not exist.

The project activities proposed to mitigate the problems by establishing the mechanisms for effective cross-sectoral consultation and coordination, particularly in terms of the identification and designation of fisheries *refugia* for fisheries management in Thailand.

Addressing the Issue

To address the issues, the project intended to:

- introduce fisheries management concepts, Fisheries *Refugia*, that are easily understood by fishing communities and emphasize sustainable use leading to community support for the ecosystem approach to fisheries management in Thailand;
- build the capacity of fisheries and environment departments and ministries in Thailand to engage in meaningful dialogue regarding how broader multiple-use planning can best contribute to improving the state of fisheries habitat management;
- improve understanding among stakeholders, including fisherfolk, scientists, policymakers, and fisheries managers, of habitat and fishery linkages as a basis for integrated fisheries and habitat management; and
- enhance and sustain the participation of local fishing communities and the private sector in management interventions for improved fisheries habitat management and biodiversity conservation through a focus on sustainable use rather than the prohibition of fishing.

For support addressing the issues, the following activities were conducted:

- Developing fisheries and coastal habitat information and data collection;
- Facilitating agreement among stakeholders on the boundaries of fisheries *refugia*;
- Developing Community-Based Management Plans;
- Establishing operational management;
- Strengthening civil society and community organization participation in the management of 2 fisheries *refugia* sites;
- Enhancing policy guidance for improved management of the effects of fishing on critical habitats;
- Developing national guidelines on the establishment and operation of fisheries *refugia*;

- Putting the “establishment and operation of fisheries *refugia* for fisheries management” in the updated “national fisheries management plan of Thailand”;
- Enhancing access to information relating to status and trends in fish stocks and their habitats in waters of the SCS marine basin of Thailand;
- Sharing improved national management and information on fish stock and fish early life history online;
- Enhancing access to information relating to the locations and status of coastal habitats and management areas;
- Strengthening the information base for the planning, monitoring, and evaluation of management at 2 priority fisheries *refugia* sites;
- Enhancing uptake of best practices in integrating fisheries management and biodiversity conservation;
- Improving community acceptance of area-based approaches to marine management;
- Sharing, nationally and regionally, knowledge generated and experiences from establishing and operating fisheries *refugia* in Thailand;
- Strengthening cross-sectoral coordination in the establishment and operation of fisheries *refugia* in Thailand;
- Harnessing national scientific and technical expertise and knowledge to support the establishment and operation of fisheries *refugia* in Thailand; and
- Catalyzing local community action via establishing and operating a site-based management board at each fisheries *refugia* site.

RESULTS AND LEARNING

As a result of the project implementation, Thailand has established and operated two fisheries *refugia* in the Gulf of Thailand, Trat and Surat Thani Provinces, and earned experience in new fisheries management via fisheries *refugia* that fully based on ecosystem and community-based approach to fisheries management. The activities have addressed the issues regarding the sustainable use of fisheries resources and the participation of multi-sectoral sectors and stakeholders, mitigating tension between fishing and the environment. Results and learning can be summarized as follows:

- Key factors for the success of the establishment and operation of Fisheries *Refugia* in Thailand are the multi-stakeholder participation and precise technical information;
- The main three cross-sectoral management committees have played significant roles in the effective implementation of fisheries *refugia* in Thailand:
 - National Fisheries *Refugia* Committee provided guidance on national policy,
 - National Scientific and Technical Committee provided guidance on technical issues, and
 - Site-based Fisheries *Refugia* Management Board provided guidance on communities’ needs.
- Provincial Fisheries Committee is the integrated-stakeholder organization that plays important roles in the direction, strategy, and decision-making authority for fisheries management in the province;
- For smoothness of fisheries *refugia* establishment, management measures in fisheries *refugia* sites should be compromised between ecosystem/habitats protection and fisherfolk’s livelihood;
- Management measures should not cause conflicts among fishers;
- Concrete management plans, based on the ecosystem-based approach to fisheries management, are essential to reach the goals of fisheries *refugia* in each site;

- Awareness building and promoting activities are vital for the successful management and community cooperation in fisheries *refugia* areas;
- After the fisheries *refugia* establishment, the local authority - Provincial Fisheries Office - is the key agency for integrating effective operation and management in its respective fisheries *refugia* site; and
- Thailand's national project activities supported the linkage of fisheries *refugia* system in the international waters of the South China Sea, particularly the transboundary species like short mackerel in Thailand and Cambodia.

REPLICATION

For replication of the establishment and operation of fisheries *refugia* in the other sites of Thailand, the specific areas of learning and best practices are highlighted as follows:

- Stakeholder engagement;
- Cross-sectoral coordination;
- Evidence/technical-based planning;
- Application of fisheries *refugia* management models and strategies;
- Measures on the use of responsible fishing gears and practices;
- Management measures which not cause conflicts among fishers;
- Compromise between ecosystem/habitats conservation and fishers' livelihood;
- Communications and awareness building;
- Political commitment; and
- Annual evaluation.

SIGNIFICANCE

Even though there are a number of fisheries management areas in Thailand regarded as fisheries *refugia*, this experience represents the first time a GEF IW project in Thailand has done on a significant contribution to the integration of fisheries and environment sectors for fisheries and coastal habitat management in the waters of the South China Sea marine basin of Thailand. According to the project implementation, Thailand has done a number of activities leading to the enhancement of scientific, institutional, and policy basis required to reduce the rates of loss of globally significant habitats and biodiversity due to fishing. This is considered necessary because of the potential global fisheries benefits associated with effective fisheries and habitat management at the local level due to the continuing importance of fisheries to food security and maintenance of livelihoods.

REFERENCES

<https://inter.fisheries.go.th/fishrefugia>

Munprasit R. and Nootmorn P. 2022. Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand, National Guidelines for Establishment and Operatio of Fisheries *Refugia*: Thailand, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand. (in printed)

Munprasit R., Nootmorn P., Loychuen K., 2020. Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand, Fisheries *Refugia* Profile

for Thailand: Surat Thani, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH31, 58 pp.

Munprasit R., Nootmorn P., Loychuen K., 2020. Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand, Fisheries *Refugia* Profile for Thailand: Trat. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH25, 37 pp.

SDF/Thailand, 2020. Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand, Report of Local Consultation Workshops on Fisheries *Refugia* Boundary and Management Planning in Trat Site, Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH30, 64 pp.

SDF/Thailand, 2020. Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand, Study Report on Area Context and Socio-Economic Conditions of Coastal Communities in Trat Province: Fisheries *Refugia* Management for Short Mackerel in Trat Site. Southeast Asian Fisheries Development Center, Training Department, Samut Prakan, Thailand; FR/REP/TH29, 119 pp.

SEAFDEC. 2014. Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand: National project document for Thailand. SEAFDEC/UNEP/GEF Fisheries *Refugia* Project, Training Department of the Southeast Asian Fisheries Development Center, Samut Prakan, Thailand. 55 pp.

KEYWORDS

- ◆ Fisheries Refugia
- ◆ South China Sea
- ◆ Gulf of Thailand
- ◆ fisheries management
- ◆ ecosystem approach

ANNEX 15: GEF IW-EXPERIENCE NOTES
**F: ESTABLISHMENT OF FISHERIES REFUGIA TOWARDS CO-MANAGEMENT IN VIET
 NAM**



ABSTRACT

Overexploitation is considered a severe environmental impact, as most reserves have been overexploited to the maximum sustainable yield (MSY), partly due to overinvestment and the development of large-scale commercial activities, including foreign vessels using extended nets that infiltrate traditional artisanal fishing areas. Building the resilience of fish stocks of transboundary significance to the effects of high and increasing levels of fishing effort, and Improving the understanding amongst stakeholders of the habitats and fishery linkages, as a basis for integrated fisheries and ecosystem/habitat management is, therefore, urgently needed at all levels. Taking into account the socio-economic conditions, people's practices, and the potential of aquatic resources which significantly affect the successful establishment of the fisheries co-management model and align with the fisheries refugia concept. Viet Nam developed the umbrella frameworks of fisheries refugia under national law, whereas 73 marine fisheries protection zones or refugia are planned for 2021-2030, with a total area of about 1,416,547 hectares, equivalent to about 1.5% of the natural size of Vietnam's sea area. Therefore, when the master plan is ready, it will be decentralized to the community through the co-management approach. The systems will engage multisectoral stakeholders in implementation. At present, two of the 73 refugia sites: at the Coastal area of Lagi – Binh Thuan, for the Subcrenata ark, 73,900 ha, and at the Eastern coastal area of Phu Quoc – Kien Giang for Blue swimming crab, 32,860 ha are identified and accepted for further implementation by stakeholders.

Pham Thi Thuy Linh and Le Tran Nguyen Hung
 Directorate of Fisheries, Viet Nam

ESTABLISHMENT OF FISHERIES REFUGIA TOWARDS CO-MANAGEMENT IN VIET NAM

PROJECT DESCRIPTION

The longer-term goals of national-level activities of the project in Vietnam are to:

- Build the resilience of fish stocks of transboundary significance to the effects of high and increasing levels of fishing effort,
- Improve the understanding amongst stakeholders, including fisher folk, scientists, policymakers, and fisheries managers, of the ecosystem and fishery linkages, as a basis for integrated fisheries and ecosystem/habitat management,
- Build the capacity of fisheries departments to engage in meaningful dialogue with the environment sector regarding the improvement of fisheries and management of interactions between fisheries and critical marine habitats

Project components

- Component 1: Identification and management of fisheries and critical habitat linkages at priority fisheries refugia in Vietnam
- Component 2: Improving the management of critical habitats for fish stocks of transboundary significance via national actions to strengthen the enabling environment and knowledge-base for fisheries refugia management in Vietnam
- Component 3: Information Management and Dissemination in support of national-level implementation of the fisheries refugia concept in Vietnam
- Component 4. National coordination for integrated fish stock and critical habitat management in Vietnam

Project Activities in the community

1. Carrying out communication and propaganda work
2. Conduct community and stakeholder consultations
3. Conducting training and training of knowledge for fishermen
4. Formulate national guidelines on the establishment and operation of fisheries resource maintenance and protection zones, relevant institutions, mechanisms and policies to implement the model
5. Develop a community-based management plan
6. Building community organizations for resource management and protection,
7. Enhancing the participation of community organizations in the management of areas to maintain and protect aquatic seed resources
8. Supporting fishermen to implement livelihood models

An Experience Note under the SEAFDEC/UNEP/GEF Project on Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and the Gulf of Thailand

THE EXPERIENCE

Issues and Challenges

Overexploitation is considered a severe environmental impact, as most reserves have been overexploited to the maximum sustainable yield (MSY), partly due to overinvestment and the development of the large-scale commercial activity, including foreign vessels using extended nets that infiltrate traditional artisanal fishing areas. Reef fish, sea cucumbers, mollusks, and crustaceans in the

South China Sea have been heavily overfished. Overexploitation also occurs for sharks, tuna, bird fish and some other offshore species. In addition, bottom-dwelling invertebrates, especially those less mobile, such as sea cucumbers, lobsters, pearl mussels, dune snails, and other bivalve organisms, are overexploited, especially around densely populated coastal areas. Shrimp are also overexploited in waters, lagoons, soft-bottomed areas, and mangroves. Endangered species (turtles and ducks) continue to be threatened, and on a local scale, there have been several extinctions.

Destructive exploitation fisheries also have a severe impact on destroying ecosystems and consequently causing environmental change. Fishing with rakes and push nets is increasingly popular with the rare use of selected fishing gear. Explosive fishing occurs frequently, contributes to increased competition among fishers, and reduces the amount of fish caught.

The socio-economic impacts of unsustainable fishing mainly include: (1) Reduced economic benefits; (2) Unemployment/loss of livelihood; (3) Conflicts between different groups of users when sharing resources; (4) Loss of food sources (e.g. protein sources) to both humans and animals; (5) Income in one region decreases due to the destruction of seed sources elsewhere (migratory populations); (6) Loss of species in need of protection; (7) Decreased commercial value due to reduced seafood quality; (8) Increase disease risk for high-value species; (9) The issue of intergenerational equity (on access to resources); and (10) Impacts on human health.

THE LESSONS LEARNED

- To successfully build a model, there must be consensus and active participation of fishermen and local authorities. Regulations on participation and coordination must be formed and developed, and the capacity of stakeholders must also be strengthened in terms of people, qualifications, means and funding,...
- The parties must meet and exchange regularly and information is exchanged continuously so that the coordination work is synchronous and highly effective.
- There must be the attention and support of provincial agencies and departments (in mobilizing and promulgating new mechanisms and policies); mechanisms and policies of the State must be clear and specific in accordance with scientific arguments and actual conditions in the locality to serve as a basis for the implementation process (currently, mechanisms and policies are not specific, causing difficulties when implementing).
- Implementing the project is not too ambitious, but should start from an easy, simple and narrow scope first, then create a basis to expand to a more difficult, complex and broad audience. Through the experience of implementing co-management projects in Vietnam, the project only focuses on the object of the project but thereby indirectly protects other species living in the same ecoregion.
- The participation of parties (State, Researchers, Fishermen and Enterprises or non-governmental organizations) must be involved in mobilizing the capacity of the parties to ensure the stable, long-term and effective operation of the model.
- Propaganda and advocacy play a decisive role in the success or failure of the model. Before entering the implementation, it is necessary to select and form a core group of fishermen (reputable, conscientious, enthusiastic) thereby creating a spread in the community).
- There must be a clear and specific mechanism for dividing interests, rights and responsibilities to encourage fishermen to participate. An operating fund must be formed for the community to ensure that the organization maintains its operations when there is no funding. In addition to rights and benefits, fishermen must make contributions (funds, property, public,...) to increase the responsibility and participation of the community, avoiding the situation of re-entering the State agency (common father no one cries).

- The competence of the implementing consulting organization, of the professional management body, of the sponsor also affects the success of a co-management model. In addition, socio-economic conditions, people's practices and the potential of aquatic resources also significantly affect the successful establishment of the fisheries co-management model.
- D-Fish also proposed two *refugia* sites: at the Coastal area of Lagi – Binh Thuan, for the Subcrenata ark, 73,900 ha, and at the Eastern coastal area of Phu Quoc – Kien Giang for Blue swimming crab, 32,860 ha.

REPLICATIONS

Viet Nam has developed an umbrella framework of fisheries *refugia* under national law. The fisheries protection areas or fisheries *refugia* are planned for the next ten years at the national level. The key frameworks are to decentralize to the local government and community levels. In the national master plan, 73 marine fisheries protection zones or *refugia* are planned for 2021-2030, with a total area of about 1,416,547 hectares, equivalent to about 1.5% of the natural size of Vietnam's sea area. Therefore, when the master plan is ready, it will be decentralized to the community through the co-management approach, including *refugia* approaches. The systems will engage multisectoral stakeholders in implementation.

ANNEX 16: FINAL COUNTRY REPORT (TEMPLATE)

By end of the project implementation at 31 December 2022, all country partners are requested to submit a final report using the template provided at the RSCT7. This paper focuses on the template of final report consisting of three parts: 1) Background, 2) Project Status, and 3) List of documents. The RSTC7 will further discuss on the timeline for submission this report to the PCU.

A. BACKGROUND INFORMATION

1	Country name:
2	Project starting date:
3	Total budget (USD): (specify contributions by donor)
4	Partners and leveraged resources:
	Describe collaboration with partners and state their role:
	List the additional resources leveraged (beyond those committed to the project itself at time of approval) as a result of the project (financial and in-kind):

B. PROJECT STATUS

1	Information on the delivery of the project	
	Activities/Outputs (as listed in the project document)	Results/Outcomes (measured against the performance indicators stated in the project document)
	Status (complete/ongoing)	
Comp.1		
	Fisheries <i>refugia</i> profile reports, including maps and site characterisations, published for priority sites	
	Published management plans and numbers of implementation reports	
	224 quarterly reports of network meetings and activities [including list of participants and results of work]	
	Operational enforcement programmes at priority sites	
Comp. 2		
	1 endorsed revised policies	
	1 published national guidelines on establishing and operating fisheries <i>refugia</i>	
	Endorsed policy and executive orders, provincial/local ordinances and by-laws	

1 endorsed National Action Plans for the management of priority fisheries <i>refugia</i> and associated biodiversity		
Quarterly and annual reports on fish stocks and habitats published online		
1 databases online and populated with datasets		
1 national Geographical Information System online and populated with site-based information		
Characterisations for <i>refugia</i> sites accessible online		
1 regional modelling system online		
4 published reports of the results of demonstrations		
Comp.3		
1 online national catalogue of best practice approaches and measures 4 communications on best practices published and syndicated		
At least 4 awareness materials published online At least 4 reports of outreach programmes at each priority <i>refugia</i> locations, including tracking of extent of community acceptance		
1 online national web portals on fisheries <i>refugia</i> 1 published GEF IW experience notes on application of fisheries <i>refugia</i> in the South China Sea and Gulf of Thailand		
Comp. 4		
1 NFRC Terms of Reference and Numbers of meeting reports (joint management decisions and participant lists)		
1 NTSC Terms of Reference and 96 quarterly meeting reports (scientific and technical advice and participants lists)		

Management Board Terms of Reference		
Quarterly meeting reports (joint management decisions and participant lists)		
1 NFRC Terms of Reference and		
Numbers of meeting reports (joint management decisions and participant lists)		
2	List lessons learned and best practices:	
3	State how the project has nurtured sustainability. Is the project or project methodology replicable in other countries or regions? If yes, are there any concrete examples or requests?	

C. LIST OF ATTACHED DOCUMENTS

(For example: publications, reports of meetings/training seminars/workshops, lists of participants, etc.)

National Scientific & Technical Focal Point		Fisheries Refugia National Focal Point	
Name:		Name:	
Position:		Position:	
Institution:		Institution:	
Signature	Date	Signature	Date

ANNEX 17: PROCEDURE AND TIMELINE FOR PROJECT CLOSURE

The Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and the Gulf of Thailand Project was implemented by the Southeast Asian Fisheries Development Center (SEAFDEC) in partnership with the fisheries agencies of the riparian countries bordering the South China Sea, namely: Cambodia, Indonesia, Malaysia, Philippines, Thailand, and Viet Nam. The focus of the Project was establishing a regional system of fisheries refugia, which are fisheries management areas, in the South China Sea and Gulf of Thailand. Initially planned for 48 months from January 2017 until December 2020, this period excluded inception phase in 2016. The Project duration was extended until 31 December 2022 due to the COVID-19 pandemic.

The objective of this paper is to guide all partner agencies on the procedure and timeline for closure the project. This matter was in advance introduce at the Sixth Meeting of the Regional Scientific and Technical Committee in July 2022, however, the PCU raised this issue again at the RSTC7 to ensure that all administrative and finance matters would be properly prepared to meet the set timeline.

The PCU want to reiterate all partner agencies that all technical activities at the national level must be completed by 31 December 2022. Regarding this, all expenditures incurred must be recorded up to 31 December 2022. Each partner agency is therefore required to submit the following documents to the PCU **by 31 January 2023**:

- a Final Country Report (using a Template as mentioned in WP.7;
- Quarterly reports for Q4/2022, including an expenditure report and all technical/progress reports;
- an inventory report of all non-expendable equipment purchased under the agreement.

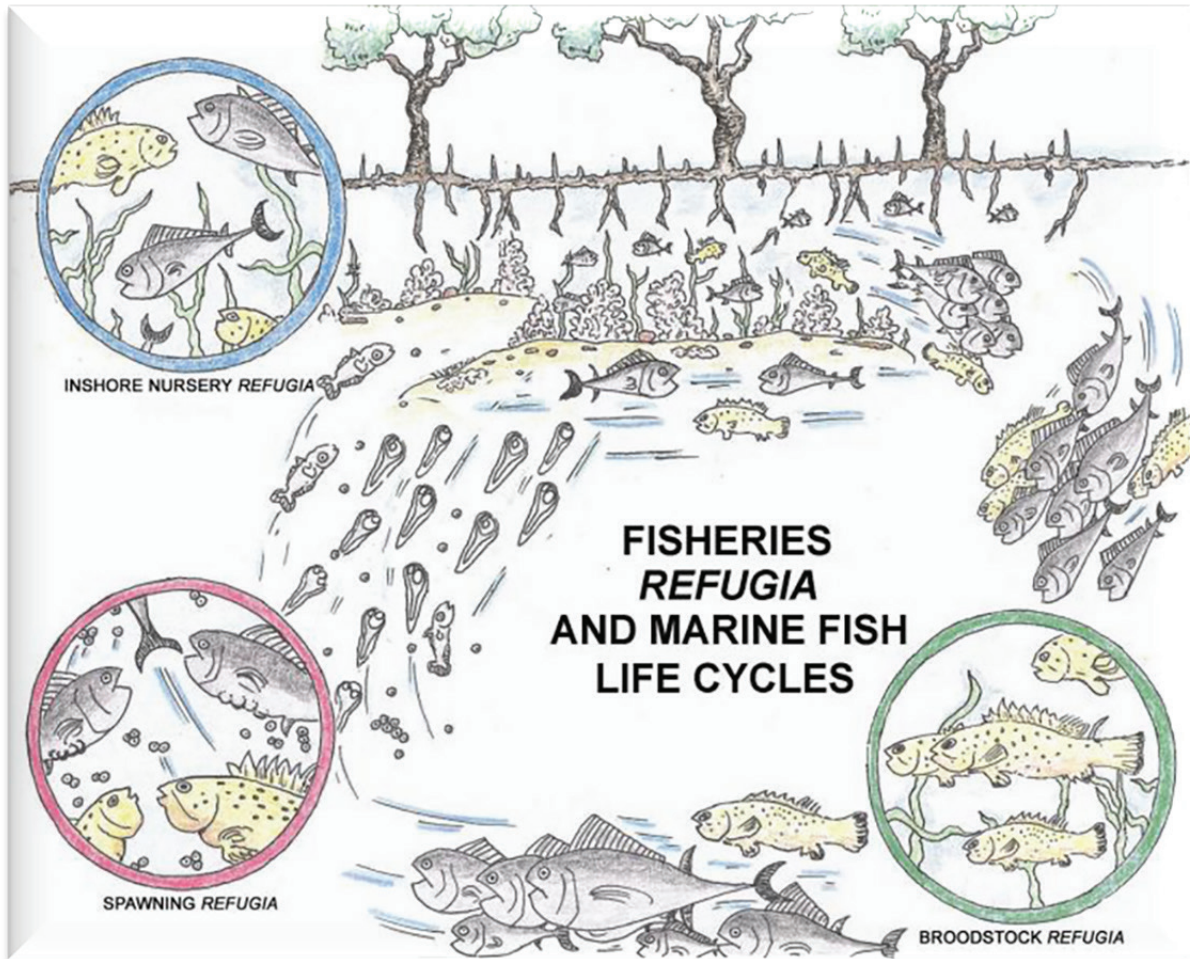
In addition, a terminal audit report covering all expenditures as of 31 December 2022 should be submitted to the SEAFDEC/PCU no later than 31 March 2023. Partner agencies have three months from January-March to complete the 2022 Audit report.

Once the 2022-audit report all documents mentioned above have been received and accepted by the PCU and SEAFDEC, a letter will be issued by SEAFDEC formally closing the agreement and stating that the equipment purchased now remains the property of the national lead agency.

if everything proceeds according to the agreed schedules, then all progress and expenditure reports, and inventories of non-expendable equipment, would be received by the PCU no later than 31 January 2023. Allowing for checking and some corrections.

Finally, MoU/LOA/LOI between SEAFDEC and partner agencies could be closed by 31 March 2023 upon receipt of the final audit report.

Accordingly, SEAFDEC, as an executing agency, will conduct the Consolidated Financial Statement Report during the 2nd Quarter of 2023, after received all national audit report by 31 March 2023. It is expected that the consolidated financial statement report will complete no later than 30 June 2023, this will allow UNEP formally closing the PCA with SEAFDEC.



What are Fisheries *Refugia*?

The term 'refugia' is the plural form of the noun of refugium, which in ecology is commonly referred to as an area that has escaped ecological changes experienced elsewhere and so provides suitable habitat for given species. The meaning of fisheries refugia is defined as: "Spatially 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 lifecycle, for their sustainable use."



The Establishment and Operation of A Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand is a part of the Strategic Action Programme for the South China Sea