



**The 3<sup>rd</sup> Regional Scientific and Technical Committee Meeting for  
the SEAFDEC/UN Environment/GEF Project on Establishment and Operation of  
a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand**

5<sup>th</sup> – 7<sup>th</sup> February 2020  
Classic Hoang Long Hotel, Hai Phong City, Viet Nam

**Improving Healthy Ocean Ecosystems through  
Best Practices and Fishing Gear Innovations**

**Executive Summary**

Fisheries in Southeast Asia contributes to high fisheries production making many countries in the region among the top ten highest producers of fish in the world. However, the perceived lack of selectivity of fishing net and the resultant capture of huge quantities and diversity of non-target species, including endangered species, coupled with its significant effect on the environment as overfishing threatens fish stocks globally, reduces biodiversity, alters the ecosystem functioning, and jeopardizes the food security and livelihoods of people. Considering the Environmental damage caused by fishing especially traditional trawlers that about 40,000 vessels are still active and directly impact the degradation of the bottom/seabed habitats, spread of marine plastic debris from lost or abandoned nets, and occurrence of microplastics, as well as increased emission of CO<sub>2</sub> into the air. These negative impacts will intensify through time if major measures were not taken to address those mentioned impacts.

To solve these problems, SEAFDEC with the support from the UN Environment Program (UNEP) has drafted the Concept Proposal through the reviewing of gap analysis and consultation with the six Fisheries Refugia implementing countries with aims to seek the international donors either Green Climate Funds (GCF) and/or Global Environment Facilities (GEF). The Objectives of the project concept note is the sustainability of ocean/ecosystem health through the best practices and fishing gear innovations in the Southeast Asia. The project design consists of four main actions that are urgently needed in the Southeast Asia as follows: 1) Promotion of effective fisheries management policies, 2) Development of innovative technologies for sustainable fisheries and capacity building, 3) Enhancing Management of fishery resources through Intensified efforts in habitat conservation and rehabilitation, and 4) Strengthening national and regional cooperation and coordination. Given that, the enormous impacts of destructive fishing practices particularly bottom trawl fishing on the health of the oceans should be impeded, particularly the alterations caused on the seabed habitats and in marine biodiversity on the continental shelf of Southeast Asia (Sunda Shelf). Such evidence is also necessary to effectively assess and manage the environmental impacts of fishing methods and to address tradeoffs given that the major fishing gears such as bottom trawl fishing makes a substantial contribution to human food supply in the world market.

The concept note was developed based on the reviews of more than 150 research papers published at national, regional and global issues. The first draft had been addressed at the 2<sup>nd</sup> Regional Scientific and Technical Committee Meeting, the 2<sup>nd</sup> Project Steering Committee Meeting and the 3<sup>rd</sup> Regional Scientific and Technical Committee Meeting of the SEAFDEC/UNEP/GEF Project on Fisheries Refugia in May, November 2019, and February 2020, respectively for consideration and comments. This is the final draft that has been amended based on the suggestions by the Refugia Project Committee from six countries. The key change in this title is focused on the best practices and fishing gear Innovations. It is

expected that the concept Note will be addressed for consideration, comments and support from the SEAFDEC Council in April 2020 for further finalizing and submit to UNEP as a GEF and GCF 's agency for funding. The full-project document will be further developed in consultation with relevant countries in the Southeast Asia. The required fund is about 50 Million for 5 Years implementation. In case for GCF, the relevant countries to the project have to coordinate with National Designated Authority (NDA) and seek for "No Objection Letter" for the Project Preparation Facility (PPF). The similar requirements for GEF, the relevant countries to the project have to coordinate through the environment agency for endorsement.

**ACTIONS BY THE SEAFDEC COUNCIL:**

- ❖ Considering and suggestion on the final draft Concept Note;
- ❖ Support for further development of the full-project document
- ❖ Suggestions on the way forwards

## CONCEPT NOTE (FOR REVIEW)

### Improving Healthy Ocean Ecosystems through Best Practices and Fishing Gear Innovations

#### I. INTRODUCTION

The South China Sea and Gulf of Thailand are geographically located on the important Sunda Shelf as a southeast extension of the continental shelf of Southeast Asia that includes the Malay Peninsula, Sumatra, Borneo, Java, Madura, Bali, and their surrounding smaller islands (Ben-Avraham 1973). It covers an area of approximately 1.85 million km<sup>2</sup> (Van Bemmelen 1949) and comprises large fishing areas suitable for bottom trawl fishing since the past.

Bottom trawl fishing in Southeast Asia has emerged since early 1970s, as a major industrialized fishing method, and became a dominant fishing method in offshore and coastal areas. Rapid expansion of trawl fishing effort, conversion of vessels, expansion of the geographical range of fishing, and retention of most animals caught have resulted in rapid depletion of stocks and changes to stock composition, destroying critical habitats, causing high impacts on benthic communities, catching of bycatch species, threatening and endangering major aquatic species, and even altering the associated ecological communities (Kongprom *et.al.* 2003; Nurhakim 2003; Campos 2003). This declining trend is compatible however with the fishing 'down marine food web', reported from well-studied parts of the South China Sea, notably the Gulf of Thailand (Christensen *et.al.* 2003).

In terms of socioeconomic impacts, more valuable fish caught by bottom trawl fisheries has decreased sharply and that there has been proportionate increase in smaller, less valuable species. These results provide a clear picture of the extent of stock rehabilitation and management efforts that are required to restore the maximum economic value to the fisheries of the region (Silvestre *et.al.* 2003).

On carbon footprint in fisheries, global fisheries burned almost 200 billion liters of fuel in 2016 compared to 47 billion liters in 1950 (Greet *et.al.* 2019). The most fuel-intensive fishing practices not only contribute most to the damaged seabed habitats and reef formations but also worsen the impacts of climate change. Bottom trawling techniques are the most fuel intensive fishing techniques. Additionally, the intensity of fuel consumption by fisheries in the Southeast Asia is high about 500-2000 liters km<sup>-2</sup> (EC 2007) compared to the other regions in the world. Reducing the carbon footprint of fisheries, particularly in bottom trawling with less fuel consumption and causing less impact from trawling is therefore needed.

Achieving effective fisheries management for bottom trawling and other destructive fishing gears are therefore increasingly important as overfishing threatens fish stocks globally, reduces biodiversity, alters ecosystem functioning, and jeopardizes the food security and livelihoods of hundreds of millions of people worldwide (Golden *et al.* 2016; Jackson *et al.* 2001; Pauly *et al.* 2005; Szuwalski *et al.* 2017; World Bank 2009). As such, the Project intends to come up with effective fisheries management policies, innovative technology for best practices, reduction of carbon footprint, and stock rehabilitation programs.

#### II. PROJECT DESCRIPTION

This project Concept Note entitled "**Improving Healthy Ocean Ecosystems through Best Practices and Fishing Gear Innovations in Southeast Asia**" is being developed to meet the need of the ASEAN-SEAFDEC Resolution and Plan of Action towards 2030 and Implementing the Strategic Action Programme for the South China Sea (SAP-SCS). The Project would be executed regionally by the Southeast Asian Fisheries Development Center (SEAFDEC) in partnership with the government agencies responsible for fisheries in the Southeast Asia: focusing all ASEAN Member States. It is expected that full proposal will be further developed to meet the requirement of the DONORS such as Green Climate Funds (GCF), Global Environment Facilities (GEF). The required fund is about 50 Million for 5 Years implementation. In case for GCF, the relevant countries to the project have to coordinate with National Designated Authority (NDA) and seek for "No Objection Letter" for the Project Preparation Facility (PPF).

The Concept Note integrates the ecosystem-based fisheries management approach through the development of effective national/regional fishery policies on sustainable fisheries and innovative technology for bottom trawl gears and methods including reduction of green-house gas emission from fishing activities. Additionally, building partnerships between multiple public and private sectors, *e.g.* local government/communities, research institutions, net makers, fisheries associations, fish meal industry, fish processors, etc. would be among the approaches to improve and change this production practice into more environmentally positive. The project includes resources enhancement activities that aim to rebuild and rehabilitate the seabed habitats as well as shelters of both demersal and pelagic fish in either offshore or coastal areas to protect and enhance demersal fish stocks due to loss of seabed habitats affected by the bottom trawl net. Cooperation among country partners (regional) and concerned inter-agencies (national) are needed taking into account the demersal fish stocks on the continental shelves that have already depleted.

The project comprises the following 4 project components:

**Component 1** will consider the results of the impact assessment and management of bottom trawl fisheries through enhanced social dimensions and developed effective fisheries management policies. The outcome of this component is improved baseline data collection and effective fisheries management policies through enhancement of Data Management System. Taking into account the social dimensions concerns, the economic value of fishes and economic efficiency in the industries as well as data collection and management are improved for long term achievements of the Project. Supporting activities are:

- 1.1. Closing the knowledge gap on the ecosystem/environmental impacts of bottom trawling via baseline data collection and evaluation, and establishment of the data management system;
- 1.2. Reduction of the pressures of bottom trawling on marine ecosystem and environment via adoption of effective fisheries management policies at national and regional levels;
- 1.3. Catalyzing the public-private sectors on the actions via the ecosystem-based fisheries management to build resilient fishery resources and reduce the impacts of bottom trawling via enhanced stakeholder engagement taking into account gender mainstreaming in fisheries management;
- 1.4. Establishment of cross-sectorial agreement on national guidelines for effective management of bottom trawl fishing;
- 1.5. Endorsement of policy, legal, and planning frameworks, both at national and regional levels, for improving the ecosystem health through best practices and Fishing Gear Innovations;
- 1.6. Improvement of economic efficiency in the industry and the individual fishers via enhanced traceability system along the value chain of fish and fishery products from bottom trawling;
- 1.7. Increasing the economic value of fishes from medium scale bottom trawlers via promotion of marketing and branding as well as marine tourism at local communities;
- 1.8. Sharing of the knowledge and lessons learned to serve as useful platforms for data and information management for utilization by various stakeholders, the wider public and practitioners.

**Component 2** focuses on improving the destructive fishing practices focusing destructive fishing gears including the bottom trawl fishing gears and methods to be more eco-friendly and fuel-efficient gears through the development of innovative technology and best practices. The outcome of this component is reduced effects of bottom trawling other destructive fishing gears on seafloor/benthic habitats and on the air quality through enhanced innovative technology and best practices in trawl fisheries. Supporting activities are:

- 2.1. Mitigation of the impacts of bottom trawling on marine ecosystem including the seabed habitats, fish stocks, by-catch, ghost fishing, etc. via enhanced ecosystem-friendly fishing gears and methods, bottom trawl innovations, and use of alternative fishing gears;
- 2.2. Enhancement of energy saving trawling including the low impact and fuel-efficient fishing through innovative technology for increased fuel-efficient gear and reduced energy consumption or carbon footprint;
- 2.3. Reduction of post-harvest losses from bottom trawlers through improved preservation technology and increased quality of catches;
- 2.4. Combating marine debris in the Region by applying integrated land-to- sea policy approaches.
- 2.5. Enhancement of public-private partnership on innovative and eco-friendly technology through creation of business opportunities and economic considerations;

- 2.6 Building the capacity and knowledge specifically in the field by collaborating with stakeholders for exchanging of the best practices;

**Component 3** focuses on enhancing management of fishery resources through Intensified efforts in habitat conservation and rehabilitation. The outcome of this component is increased fisheries production through fisheries enhancement and rehabilitation of seabed habitats programs within the EEZ where no MPAs established and no fish shelters existed. Using the data management system especially spatial data on fishing effort, the project will monitor the pressures of bottom trawling on seabed and identify the seabed/grounds for installing the artificial fish habitats to increase fish production in the offshore areas. Supporting activities are:

- 3.1. Investigation of the suitable grounds for deployment of the artificial fish habitats through the assessment of critical seabed habitats using high-resolution spatial data on fishing effort;
- 3.2. Provision of platform for knowledge sharing and exchange of the best practices and innovations to enhance the management of fishery resources, habitat conservation and rehabilitation;
- 3.3. Increasing the artificial fish habitats or shelters of fishes in the areas where habitat loss through science-based management;
- 3.4. Catalyzing the inter-agencies cooperation for management of fishery resources, habitat conservation and rehabilitation of critical sea-bed habitats

**Component 4** will foster the national and regional cooperation and coordination in enhancing the healthy ecosystems through the establishment of data management system, development of the bottom trawl best practices and alternative gears as well as creation of the offshore artificial fish habitats where there are no MPAs or shelters for fish to hide. At national level, the project will strengthen cross-sectoral coordination and will harness the national scientific and technical expertise and knowledge necessary to promote the policy, legal and institutional reforms for fisheries refugia management in the participating countries. Regionally, Component 4 will foster regional cooperation in: the integration of scientific knowledge and research outputs with effective fisheries management policies; and in enhancing the healthy ocean through the Best Practices in Trawl Fisheries. This component also includes project coordination and management activities aimed at: ensuring the timely and cost-effective implementation of the regional and national-level activities; and satisfying the reporting requirements of UNEP and the Donors. Supporting activities are:

- 4.1. Strengthening of the cross-sectoral coordination in improving the ecosystem health;
- 4.2. Harnessing of the national scientific and technical expertise and knowledge in promoting policy, legal and institutional reforms for enhancing the healthy oceans and implementing the best practices and fishing gear innovations;
- 4.3. Regional cooperation in the integration of scientific knowledge and research outputs with effective fisheries management policies;
- 4.4. Regional cooperation in enhancing the healthy ocean ecosystems;
- 4.5. Effective coordination of regional and national-level activities and satisfying the reporting requirements of UNEP and Donors

The longer-term goals of this Project are to contribute to: improved seabed ecosystems particularly on the Southeast Asia continental shelf and other critical seabed habitats; improved national fisheries management policies of the destructive fishing including bottom trawling that threatens the demersal and pelagic fish stocks and critical seabed habitat linkages; and enhanced uptake of best practices in fisheries management and biodiversity conservation in the design and implementation of regional and national fisheries management systems. The medium-term objectives are to: build the resilience of Southeast Asian bottom trawl fisheries to the effects of high and increasing levels of fishing effort on seabed habitats; improve the understanding among stakeholders, including fisherfolk, scientists, policy-makers, and fisheries managers, of the seabed ecosystem and fishery linkages as basis for integrated fisheries and ecosystem/habitat management; and build the capacity of fisheries departments/ministries and all relevant private partnerships to engage in meaningful activities regarding the improvement of fisheries and management of interactions between fisheries and critical seabed habitats. The related end-of-project targets are:

- by 2025, regional data management systems are established for effective fishing management and monitoring of the effects of bottom trawling on seabed habitats;
- by 2025, Effective fish shelters and/or artificial fish habitats are built that have potential in enhancing fisheries resources in the Southeast Asia continental shelf;
- by 2025, fisheries management policies on the best practices and fishing gear innovations are developed and implemented;
- by 2025, about 20% improved bottom trawlers are adopting the best practices and fishing gear innovations and reducing their effects on the sea-bed habitats.
- by 2025, about 25% reduction of carbon footprint from bottom trawling in Southeast Asia is achieved

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