

Strategies for trawl fisheries bycatch management project (REBYC-II CTI)



Project achievements and policy recommendations for Indonesia



Purpose of the policy brief

The purpose of the policy brief is to provide key information and recommendations to policy and decision makers, fisheries managers, fisheries resource users and other relevant stakeholders on issues, challenges and opportunities to improve the management of trawl fisheries. This should in the long run lead to healthier fish stocks and habitats, increased economic benefits from resource use, and sustainable development.

Trawl fisheries

Fisheries, in particular trawl fisheries, are important in meeting the demand of fish for human consumption, export and as aquaculture feed. Trawling is considered an efficient fishing method where a fishing vessel drags a cone-shaped net over the sea bed (sometimes also through the water column, i.e. mid-water trawling).

However, excessive amount of bottom trawling in inappropriate locations is for a number of reasons not sustainable due to various potential negative impacts to marine resources and ecosystems. There is a need to minimize those impacts through improved management, and to strengthen compliance with the required management measures.

Impacts of trawl fisheries

Trawl fisheries, when not well managed, has in many regions of the world led to overfishing, as shown by decreases of average size of landed fish and declining catch per unit effort. Moreover, bottom trawling can lead to alteration and degradation of sea bed habitats, thus further reducing biodiversity and productivity. Changes in the structure, function and integrity of ecosystems, including effects on the food web and multispecies predator-prey relationships, are further consequences of unmanaged trawling. Even if targeting only certain economically important fish species, tropical bottom trawling almost invariably leads to large amounts of bycatch due to the highly multispecies nature of the fishing grounds. This constitutes one of the major negative impacts of trawling.

Bycatch

Bycatch largely consists of small-sized non-targeted and unwanted species, juveniles of economically important fish, and sometimes also of endangered, threatened and protected (ETP) species such as marine turtles and bottom invertebrates (e.g. sponges). In some fisheries, at least a part of the bycatch is discarded. However, in many countries the bycatch is utilized for aquaculture feed or for direct human consumption, and forms part of the income for the fishing crews.

The capture of large number of non-targeted species and juveniles (bycatch) has a range of potential negative impacts. It contributes to unsustainable resource use, reduction of biodiversity and productivity and therefore - while sometimes producing short-term economic benefits for some - general long-term reduction of economic benefits from resource use. This is clearly evident when fish are caught before they reach marketable size, or before they have spawned at least once.

Many countries have issued fisheries regulations and laws aimed at minimizing bycatch through technical or other regulatory measures. The Food and Agriculture Organization of the United Nations (FAO), through funding obtained from the Global Environment Facility (GEF), continues

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to assist countries in addressing bycatch and other negative impacts of trawl fisheries management through a series of regional projects started in 2004 in West Africa, the Caribbean and Latin America, the Middle East and in Southeast Asia and the Coral Triangle region, and through a range of publications, including the FAO International Guidelines on Bycatch Management and Reduction of Discards.

The strategies for trawl fisheries bycatch management Project

Project overview

The Strategies for Trawl Fisheries Bycatch Management (REBYC-II CTI) Project was implemented in Indonesia, together with other participating countries, Papua New Guinea, Philippines, Thailand and Vietnam, aiming to address some challenges on trawl fisheries management by promoting sustainable fishing practices and improving fisheries management. The Project contributes to more sustainable use of fisheries resources and healthier marine ecosystems in Indonesian waters by reducing non-sustainable bycatch and other fishing impacts from trawl fisheries. The Food and Agriculture Organization of the United Nations (FAO) was the Global Environment Facility (GEF) agency for the Project that was funded jointly by GEF and the implementing and executing partners. The regional project implementation partner was the Southeast Asian Fisheries Development Center (SEAFDEC) through its Training Department in Thailand.

The Project was structured around four interrelated components:

1. The *policy, legal and institutional frameworks component* worked towards the establishment of national or area specific trawl fisheries bycatch management plans and the building of institutional capacity for their implementation.
2. The *resource management and fishing operations component* led to the adoption of more selective fishing gear and practices for implementation of the zoning of fishing areas, developing spatial-temporal closure management measures, and for gathering other necessary information for development of trawl fisheries management plan.
3. The *information management and communication component* included the establishment of standardized data collection methods and implementing data collection at landing sites and onboard vessels.
4. The *awareness and knowledge component* addressed awareness and knowledge of trawl fisheries bycatch management issues and how they relate to sustainability, and what measures are available to make fishing more responsible.

What is sustainable fisheries resources management?

The sustainable use of fisheries resources and healthier marine ecosystems requires management systems that deliver ecological and economic benefits. Tropical trawl fisheries management aims to increase the social, environmental and economic benefits from harvesting natural fisheries resources. It also attempts to reduce the negative impacts of the many complex issues that affect the sustainable development of fisheries.

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How to manage sustainably trawl fisheries with the aim to contribute to sustainable development, delivering ecological and economic benefits now and for future generations?

Sustainable development of fisheries is implemented through the ecosystem approach to fisheries (EAF) management, which has become internationally accepted as a guide to planning and managing human activities in relation to the natural environment. The EAF takes account of the fact that fisheries operate in (and indeed rely on) the ecosystems in which they occur. EAF therefore seeks to manage fisheries holistically, incorporating impacts that the fishery (and various management measures) may have on interacting species and the broader ecosystem, of which human society is part. In order to manage sustainably, fisheries management needs to consider the impact of fisheries on the habitats and other resources, as well as impacts of other economic activities on the fisheries.

In Indonesia, these considerations as per the project included the following:

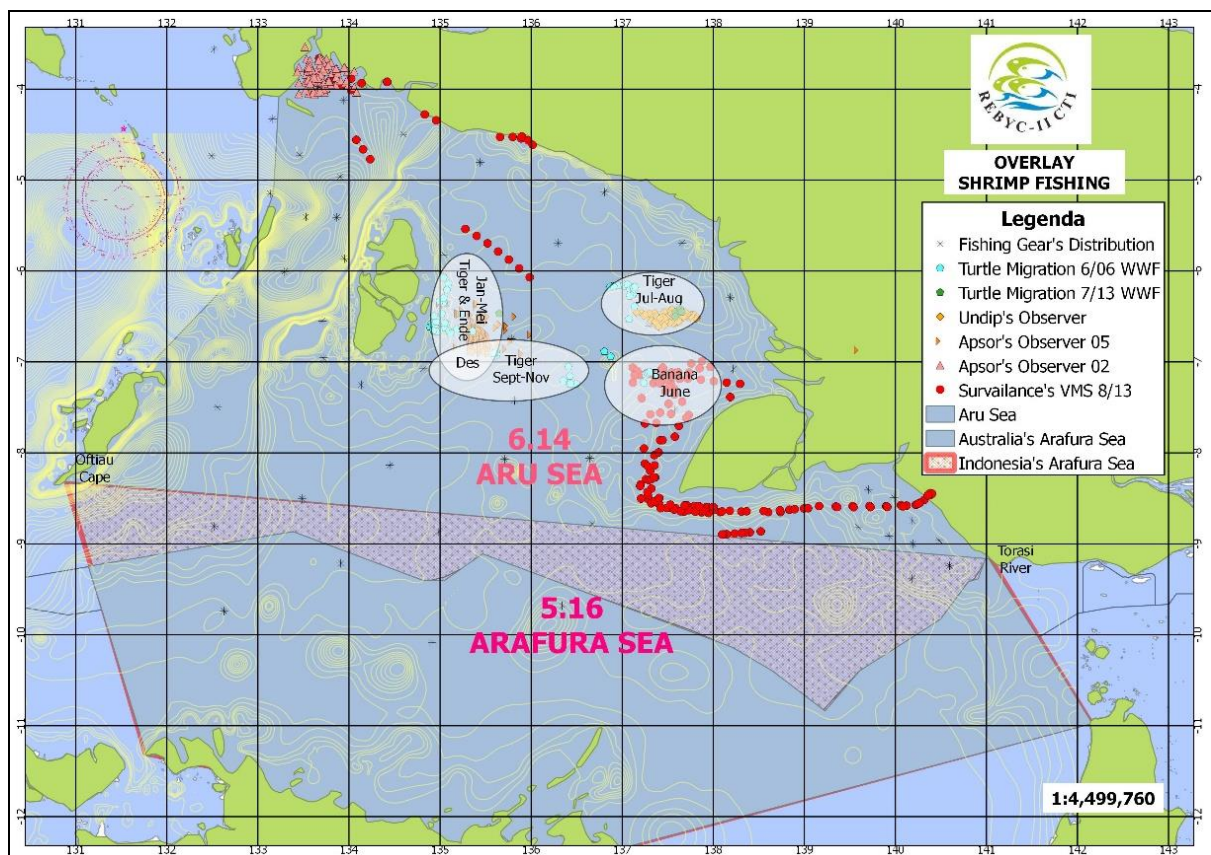
- Manage the trawl fisheries in a manner that promotes the conservation of biological diversity in the marine environment;
- Maintain stocks of primary and key secondary species harvested by the trawl fisheries at sustainable levels;
- Promote the conservation of threatened species, populations and ecological communities likely to be impacted by the operation of the trawl fisheries;
- Avoid sensitive fishing grounds;
- Appropriately share the resource and carry out fishing in a manner that minimizes negative social impacts;
- Promote a viable trawl fisheries, consistent with ecological sustainability;
- Facilitate effective and efficient compliance with management and regulatory measures;
- Improve knowledge about the trawl fisheries and the resources on which it relies.

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The exceptional situation in Indonesia compared to other REBYC II CTI Project countries

Though not the objective of the Project, Indonesia had introduced a countrywide trawl ban through Ministry Decree No.2/PERMEN-KP/2015 and also a moratorium of operation of ex foreign vessels through Ministry Decree No.56/PERMEN-KP/2014. This has been an extreme step that directly arrests the ecosystem impacts of trawling. But the following are the major implications:

- Arafura Sea becomes an area that is protected from IUU fishing activities conducted by some neighbouring countries;
- Decreasing National production of shrimp;
- Unavailability of alternative fishing gears to catch shrimp with high quality and a good performance as produced by trawling;
- Reduction of fishing capacity to the optimum level through implementation of output controls;
- Management of environmental friendly fishing gear in Arafura Sea to preserve a healthy marine ecosystem and biodiversity, as well as achieving the Project objectives and Sustainable Development Goal (SDG) 14.



Overlay of shrimp fishing

Project components and main achievements in Indonesia

Component 1: Policy, legal and institutional frameworks

REBYC Indonesia representatives participated in the APFIC regional workshop to develop regional guidelines on bycatch management and reduction of discards. The International Guidelines on Bycatch Management were translated into Bahasa Indonesia. The Arafura Sea Management Plan (WPP-NRI 718) was developed and adheres to the International Guidelines on Bycatch Management and the Reduction of Discards. Contributed to Arafura Sea Fisheries Management Plan, with regards to mapping of critical habitats, fishing gear selection to exploit major resources, and calculation of fishing vessel numbers. Total Allowable Effort (TAE) management was identified as a strategy for managing fishing capacity. A draft TAE guideline document was developed and used with working group in Sorong. Two national REBYC working group meetings and Local Consultative Group Meetings held at Ambon and Sorong. A working group was established for preparation of fisheries management in Arafura Sea.

Component 2: Resource management and fishing operations

Guidelines for sharing of thematic data and information on fisheries and aquatic environment for trawl fisheries management in Aru and Arafura Sea were developed through participation and contribution of stakeholders such as businesses, research institutions, NGOs, academia, and other projects (sharing data and information). These guidelines were designed to provide fishing gear management in order to prepare habitat maps and mechanisms for data collection with reference parameters and key indicators that can describe the habitats in Aru and Arafura Sea. Habitat mapping of Arafura Sea was completed. The guidelines are used by universities such as Sorong Fisheries Academy.

Component 3: Information management and communication

An overview on socio-economics and the shrimp trawl industry after the 2nd trawl ban was produced. Three National Working Group (NWG) meetings were held to prepare simple logbook for trawl/bycatch management purposes (in collaboration with IMACS project of MMAF and USAID). Logbooks are being used for onboard observer activities to obtain length frequency of some key species caught by trawling. REBYC Indonesia website was established: <http://rebyc-cti.kkp.go.id>. Total Allowable Effort (TAE) study was carried out.

Component 4: Awareness and knowledge

Stakeholder meetings were held at Sorong and Ambon. Training of observers on board and training for data collection and sharing (for habitat mapping, gear type selection and TAE Management) were provided. Participated in Workshop on Data Collection - Trawl Fisheries Management information, and Data Requirements. Also participated in regional training course on co-management and locally based approaches for responsible fisheries, GIS Training in Semarang and M&E course. Training on Ecosystem Approach for Fisheries Management (EAFM) for fisheries officers was carried out. An exposure visit to Australia to understand the fisheries certification process was conducted.

Recommendations on trawl fisheries management

1. Implement the management concept through MGT Scheme (Mapping, Gear type selection, TAE management), developed by REBYC-II CTI:
 - Mapping: Based on the fishers' experience, the Government is to create a map of fishing areas, in order to reduce negative impact and avoid fishing activities in critical habitats. The objective of mapping is to manage the identified zone of fishing area through seasonal or temporal closure.
 - Gear type selection: How to choose an alternative fishing gear to catch fish and shrimp with high quality and a good performance from existing fishing gears in Arafura Sea. The objective of gear type selection is to determine the permissible fishing gear in accordance with the environmental characteristics and the major target species in fishing grounds with high productivity and high selectivity and minimal (low) impact on the environment (LIFE Fishing).
 - TAE Management: The Government is to monitor more accurately the shrimp resource potential so as to determine the appropriate fishing capacity through limiting the fishing licenses. The objective of TAE is to determine the number of fishing permits based on the fishing capacity / total allowable effort as well as reasonable quotas and the right of small-scale fishers to catch fish and industry to maintain fairness of access to fish resources in achieving optimal economic benefits.
2. Develop shrimp fishing industry/business, which can reduce unsustainable shrimp fishing activities. The steps are:
 - Standardization of fishing gear.
 - Certification of fishing activities related to market (market based instruments).
 - Ensure contribution of shrimp fisheries to local communities and local economy through equitable benefits sharing.
 - Address the issue of bycatch (Endangered, Threatened and Protected species, fish juveniles and unwanted species) and discourage unsustainable fishing. There should be a clear understanding on:
 - a. the target species (and their life cycle)
 - b. the marine food chain
 - c. fish refugia and their conservation-protection
 - d. balancing fish for human consumption and animal feed. If the purpose of fishing is to make all the catches only as raw materials for fish meal, it will cause the fishing activities to be not selective and break the food chain.

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