

**REGIONAL GUIDELINES
FOR RESPONSIBLE FISHING OPERATIONS
IN SOUTHEAST ASIA¹**

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¹ This Regional Guidelines are the final outcome of the Post-meeting of Core Experts for the Regionalization of the Code of Conduct for Responsible Fisheries, Phase I: Responsible Fishing Operations held from 24 to 25 May 1999 at SEAFDEC Training Department, Thailand.

CHAPTER I: INTRODUCTION

The FAO Conference adopted the Code of Conduct for Responsible Fisheries (CCRF) in 1995. Following the Cancun Conference in 1992, four years of exhaustive effort by the interested countries of the world resulted in a consensus on the current comprehensive text of the CCRF. During the negotiation process, specific regional issues were diluted, or perhaps even avoided, with a view to finding an acceptable global compromise and consensus on controversial issues.

Achievement of CCRF is epoch-making even if contained issues do not cover all areas of concern on sustainable fisheries in the world. This is a great achievement by the international fisheries society to rectify the current practices of fisheries, which have proven to be not sustainable. Implementation of the CCRF is therefore very important for the achievement of sustainable fisheries in the region. It should be noted that global sustainable fisheries will not be achieved unless Southeast Asian countries who have contributed a major part of global fisheries production take appropriate action toward the achievement of sustainable fisheries. However, it might be appropriate to consider the specific fisheries situation in the region prior to the implementation of the CCRF.



Trawl Net Hauling

At the Thirtieth Meeting of the Council of the Southeast Asian Fisheries Development Center (SEAFDEC) at Bandar Seri Begawan, Brunei Darussalam on 17-21 March 1998, the Council Directors fully supported the program for the Regionalization of the Code of Conduct for Responsible Fisheries. They unanimously agreed to implement it in SEAFDEC's prioritized program in view of the facts that 1) some part of the global Code of Conduct require modification to adjust to the regional specificity; and, 2) clear regional policy should be reflected in the Code. The Council also specified that SEAFDEC should make efforts to establish an Asian Code of Conduct for coastal fisheries and aquaculture, which may be expanded to cover the other ASEAN members. In addition, SEAFDEC Strategic Plan adopted at the same meeting emphasizes the importance of the program on the Code of Conduct for Responsible Fisheries.

Based on the recommendations made at the Council Meeting, SEAFDEC prepared a comprehensive program on “the Regionalization of the Code of Conduct for Responsible Fisheries”(http://www.seafdec.org). Since the program is a long term and wider commitment for SEAFDEC to implement the various required activities, the preparation of Regional Guideline for the Code of Conduct for Responsible Fisheries, Phase 1: Responsible Fishing Operations was selected as the primary and major activity under the program.

In June 1998, five regional core experts (Indonesia: Mr. Chairul Nasution, Malaysia: Mr. Rosidi Bin Ali, the Philippines: Mr. Jonathan O. Dickson, Thailand: Mr. Pirochana Saikliang, Vietnam: Dr. Nguyen Long) and four Advisors (Mr. Bundit Chokesanguan, Prof. Dr. Takafumi Arimoto, Dr. Frank Chopin and Dr. Yasuhisa Kato) were selected for the preparation of documents on the draft regional definition of terminology and draft Regional Technical Guidelines. A Pre- Meeting of Core Experts was organized to harmonize the approach for the preparation of documents.

Between 9-12 November 1998, an “Expert Consultation on the Regionalization of the Code of Conduct for Responsible Fisheries Phase 1:Responsible Fishing Operations” was organized in Chiang Mai, Thailand. The purpose was being to discuss the Regional Guidelines for Article 8, Fishing Operations of the Code of Conduct for Responsible Fisheries. Also discussed were the required regional definitions of terminology prepared by the Core Expert Group. The context of this document is based on the outcome of the meeting.

CHAPTER II: GENERAL PRINCIPLES

As a first step toward “The Regionalization of the Code of Conduct for Responsible Fisheries”, the Regional Guidelines for Responsible Fishing Operations corresponding to the Article 8 of the CCRF was prepared. The following general principles will be applied to the whole document in order to clarify the nature, coverage and objectives of the Regional Guidelines.

OBJECTIVES OF THE REGIONAL GUIDELINES

The objectives of the Regional Guideline are 1) to clarify the requirements, 2) to prioritize the required action; and, 3) to identify the areas which require special consideration in the regional context, contained in each paragraph of the relevant CCRF when the regional States implement the relevant CCRF.

RATIONALE OF THE PREPARATION OF THE REGIONALIZATION OF THE CODE OF CONDUCT

The CCRF is a comprehensive and global guiding principle to achieve sustainable fisheries. However, global and non discriminatory application of the global CCRF to the specific regions or countries may require some modification in order to be effectively implemented in specific circumstances. In the Southeast Asian Region, the three following specific regional situations must be fully considered for inclusion in the modifications and applications of the Code;

1) Cultural Situation: The people in the Southeast Asian Region have greatly and historically depended on fish in their diet. Therefore, fisheries can not be replaced by an alternate system to secure protein in food including livestock products (Food security considerations). Methods to catch fish (Great numbers of traditional fishing gear and practices). Fish processing methodologies (Diversification of traditional fish processing methods including fermentation, boiled and dried, fish sauce, etc.) and fish marketing systems that have traditionally and greatly diversified (Social, economic and cultural considerations). In this connection, the fisheries sector as a whole has been developed into a traditional and complex system compared with any other part of the world except the Far East. Special consideration on this cultural aspect must be given if the global system such as CCRF, which is based on a more simple structure, is going to be applied in the region.

2) Fisheries Structure: Based on the long history of fisheries development in the region, the structure of fisheries differs from those of developed fishing nations that are mainly located in the Temperate Zone and are often used as a model of global fisheries agreements or instruments. In the region, while industrial fisheries was developed in addition to the traditional fisheries after 1960, following the transfer of modern technologies. This major fishing sector in terms of numbers of people involved can be categorized as small scale, coastal and subsistence fisheries. Although the structure differs country to county; a majority of the fisheries in the region can be categorized as non-industrial and small scale traditional fisheries. Social, economic and cultural consideration in addition to the scientific and environmental factors is essential in order to manage and modify these sectors.

3) Ecosystem: In tropical waters, fisheries resources are of comparatively multi-species composition especially in demersal stocks. In addition, (group of) dominant species do not compose the majority of catch, as in the fisheries in the Temperate Zone (dominant species compose 70-80% of the catch in the Temperate Zone, those of tropical fisheries compose 20-30%

of the catch.) The latter phenomena, especially, will show a significant difference in gear selectivity and stock assessment methodologies which having been developed in the fisheries in the Temperate Zone that species composition are comparatively simple.

Additionally, proper recognition of the difference between the developed and developing countries must be given during the implementation of the globally accepted international fisheries instruments in the region. The current CCRF was mainly prepared on the base of the situation in the developed fishing nations, many paragraphs of the Articles of CCRF can not be directly applied to the situation in the developing countries where basic structures are not yet developed. In line with the implementation of the CCRF in the developing countries, special efforts will be required for the current situation.



Unloading a Bottom Gill Net from the Fishing Boat.

AREA OF COVERAGE

The SEAFDEC program on the Regionalization of the Code of Conduct for Responsible Fisheries including Phase 1: the Regional Guidelines for Responsible Fishing Operations is principally aimed at supporting the implementation of the CCRF by ASEAN Countries. However, it is hoped that the countries, which share similar specific fisheries circumstances can use it as a relevant reference.

In the region, the inland fisheries are also a very important sub-sector in economic activities, the regional guideline have also tried to include the important elements and factors specific to this sub-sector.

INTERNATIONAL LEGAL INSTRUMENTS

Many relevant regulations, principles and requirements under international law, Agreements and Conventions are referred to in the CCRF. While some of these have clear fisheries objectives, others have wider objectives including maritime affairs. Policy makers in each State should recognize the international concerns and to effectively use the relevant instrument, it is suggested that they should set up a working group composed of legal experts and relevant technical experts to verify each article of relevant international instruments. They should clarify which articles should be applied to the fisheries sector in their countries. States should also take appropriate legal action to enact appropriate National laws, together with appropriate dissemination to the public and users and the setting up of an appropriate enforcing mechanisms.

It should be noted that the target group of such international instruments is generally the large-scale industrial sectors but small-scale fisheries, which are a major part of fisheries in the region, are hardly covered. Therefore, special consideration is required for the fisheries in the region, the major part of whom are categorized as small-scale. In applying the Codes, States must first clarify the target group and, if certain target groups are not covered, specific regulations applicable to such groups must be elaborated.

The FAO and other relevant international organization have been requested to provide relevant information on the extent of the implementation of such international conventions and instruments to the respective authorities. It should be noted that the States in the Southeast Asia should provide appropriate information on the implementation of particular conventions and agreements on request by such organizations.

CHAPTER III: REGIONAL DEFINITIONS OF THE TERMINOLOGY

Prior to the Regional Guidelines, clarification of the definition taking into account the regional specific fisheries situation mentioned in the General Principle, for the terminology used in the CCRF and Regional Guideline is required in order to have a common understanding on the issues contained therein.

TARGET CATCH

Due to the multi-species composition of fisheries resources particularly coastal / demersal stocks, target catch (synonymous of target size or target species is less preferable in the region due to multi-species catch nature) is not generally used for regulation purposes and as a general concept of the fisher. Therefore, target catch will not be defined as a general term, but can be used for some industrial fisheries as follows.

“The component of the fish stock/resource (of a given size, species, etc.) primarily sought or aimed at by the industrial fisher.”

BY-CATCH

By-catch is a term attached to target catch. Since target catch is not a useful term applying to all fisheries in the region, the term of by-catch will be used for industrial fisheries as follows.

“A general term for the component of the catch, which is anticipated to be caught during an industrial fishing operation, in addition to the target catch.”

Special emphasis should be placed on the management of by-catch of shrimp trawlers irrespective of their sizes.

INCIDENTAL CATCH

“A general term for the catch, which is not anticipated to be caught during a fishing operation, but are incidentally caught.”

Since the by catch will not be generally used in the region, specific components of by-catch can be defined as incidental catch which requires specific attention in gear selectivity and appropriate management action. In this connection, the incidental catch may be composed of 1) aquatic animals including mammals, turtles and sea birds. 2) debris including parts of coral reefs; and, 3) juveniles. Since the catch component of juveniles may not be categorized as incidental catch, juveniles can be treated separately. However, as the catch of juveniles is a serious problem in terms of resources and has bio-diversity implications in the region, inclusion of juveniles in the incidental catch will be an idea to clarify the target group upon which States requires specific action with a specific regional term.



RETAINED CATCH

“That portion of the catch, which will be landed at the fishing base or distributed to the market.”

A clear understanding of the difference between “Retained Catch” and “Catch Retained in the Fishing Gear” will be required especially for research and development work on gear selectivity.

TOTAL CATCH

“The Catch on board the vessel.”

Total Catch is synonymous with “Retained Catch in the Fishing Gear”.

DISCARDED CATCH = WASTE

“That portion of the catch returned to the sea (or otherwise thrown away) as a result of economic considerations – deemed to have none or even negative value to the catcher.”

Discarded catch in the region is usually composed of unwanted catch (low or no value species and undersized commercial value species, sometimes referred to as “trash fish”) and incidental catch such as debris and juveniles. Sometimes, due to the need for effective operation, limited space and capacity of preserving facilities, catch components with low commercial value are discarded to the sea. In addition, quite large amounts of catch have been discarded as catch with unacceptable quality mainly because of poor preservation capacity (lack of ice and limited capacity/space of the facilities for preserving catch) of the fishing vessel as well as on shore.

GEAR SELECTIVITY

Gear selectivity from the user point of view should be defined as having the property to select target species including the sizes of fish. However, as most of the fishers in the region do not clearly define their target species, it may be defined as follows.

“Gear selectivity is a property of fishing gear that reduces/excludes the capture of unwanted sizes of fish and incidental catch”

In tropical waters having multi-species catch compositions, it should be noted that the applied gear can only select the appropriate size of fish caught. However, fishers may further select their catch at the level of the group of species in their practice with a knowledge of various ecological factors including seasonal migration patterns, spawning seasons, feeding and distribution of fish, etc.

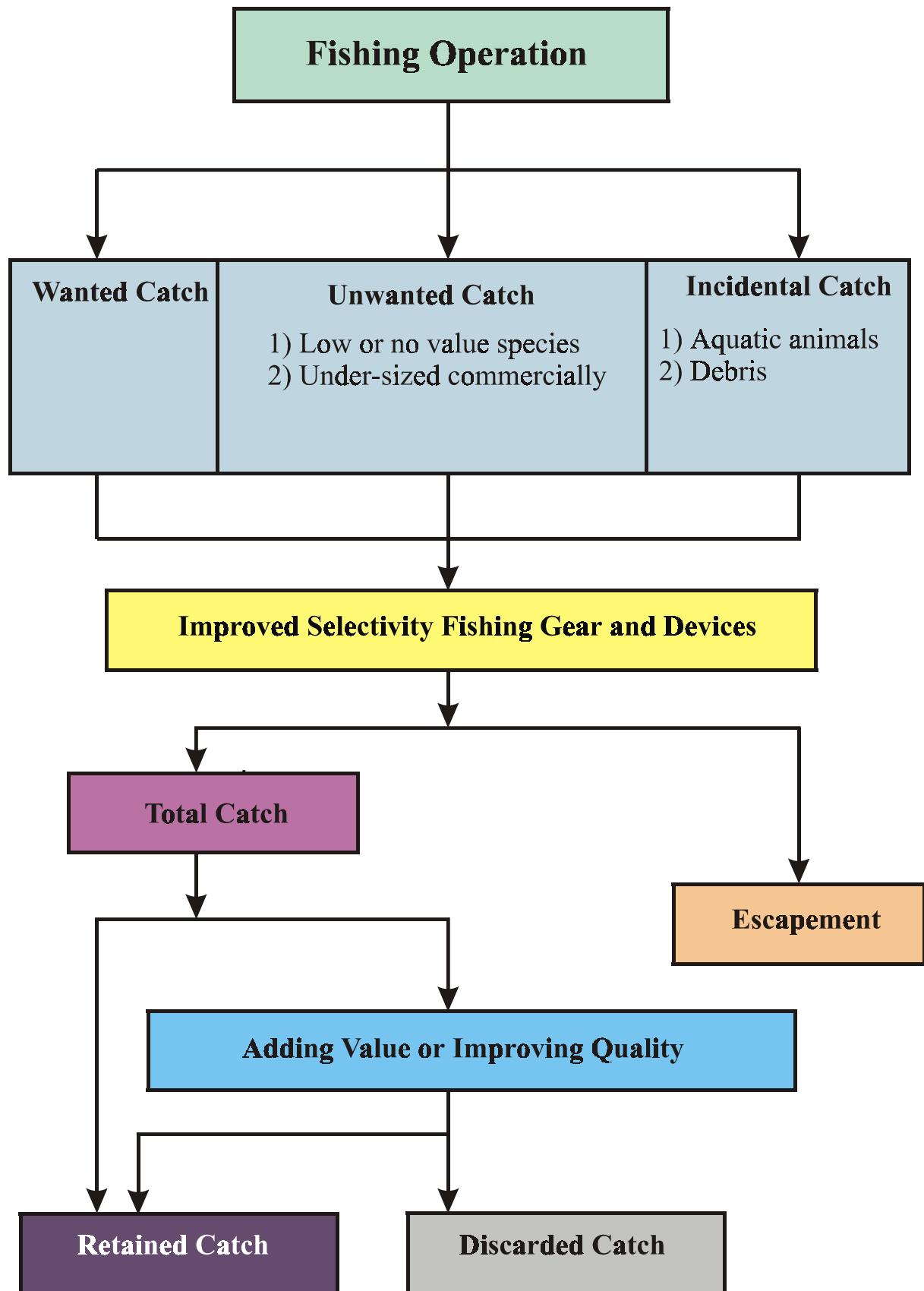
SELECTIVE FISHING GEAR

“Fishing gear, which have been designed to exclude/reduce the capture of unwanted sizes and species of fish and the incidental catch, and release these excluded fish from the fishing gear with a high survival rate.”

ESCAPEMENT

“The rate/amount of fish that escape through meshes or other devices after entering the fishing gear.”

The following conceptual diagram shows the linkages among the above terminology for the activities during fishing operations.



DESTRUCTIVE FISHING GEAR AND PRACTICES

“The fishing gear and practices that have a destructive effect on ecosystems including environment, fishery resources, etc.”

ILLEGAL FISHING GEAR AND PRACTICES

“The fishing gear and practices that are prohibited by laws and regulations.

The destructive fishing gear and practices are classified as illegal fishing gear and practices in the national laws of most of the States in the region.



Push Net, One of the Destructive Fishing Gears

GHOST FISHING

“Fishing effect caused by abandoned or lost fishing gear.”

ABANDONED FISHING GEAR

“Any fishing gear or part of fishing gear that is discarded into the aquatic environment.”

FISHERIES STRUCTURE

It is not simple to define regional fishing structures such as coastal fisheries and industrial fisheries due to different legal definitions by each State in the region. The following table shows the fishing zones used by different types of fishing boat in selected countries in the Region.

Table 1 : Fishing Zones of Countries in Southeast Asia

Countries	Fishing Zone 1	Fishing Zone 2	Fishing Zone 3	Fishing Zone 4
Brunei Darussalam	From shore line out to 3nm.	From 3 nm to 20nm.	From 20 nm to 45nm.	From 45nm to EEZ limit.
Cambodia	From shore line out to 20m depth.	From 20m depth to EEZ limit.		
Indonesia	From shore line out to 3nm.	Four nautical miles from the outer limit of first fishing zone or 7nm from shore.	Five nautical miles from the outer limit of second fishing zone or 12nm from shore.	More than 12nm from shore.
Malaysia	From shore line out to 5nm.	From 5 nm to 12nm.	From 12 nm to 30nm.	From 30nm to EEZ limit.
Myanmar	From shore line out to 5nm in the northern area, 10nm in southern area.	From outer limit of first fishing zone to EEZ limit.		
Philippines	From shore line out to 15 km.	From 15km to EEZ limit.		
Thailand	From shore line out to 12nm.	From 12nm to EEZ limit.		
Vietnam	From shore line to 30 m depth in Northern and Southern areas, to 50 m depth in Central area.	From 30 to 50m depth to the EEZ limit.		

The following table shows the type of fisheries in their legislative base in selected countries in the region.

Table 2 : Classifications of Small-scale Fisheries and Large-scale Fisheries

Countries	Small-scale Fisheries	Large-scale Fisheries
Brunei Darussalam	Small-scale/Artisanal fisheries : Operating in all Zones but concentrating in Zone 1.	Industrial Fisheries: a) Trawlers less than 350HP operating in Zone 2. b) Purse seiners less than 20m LOA operating in zone 2. c) Trawlers with 350-550 Hp operating in Zone 3. d) Purse Seinners with 20-30 m LOA operating in zone 3. e) Purse seiners more than 30m LOA operating in Zone 4
Cambodia	Coastal Fisheries : Small scale fisheries with/without engine (from 5 HP to 50 HP) operating in zone 1.	Commercial Fisheries : More than 50 HP operating in zone 2.
Indonesia	Small-scale Fisheries : 1) Outboard engines <10 HP or < 5 GT operating in zone 1. Trawls, purse seines and gill nets are not allowed, except for purse seines with a head rope < 120 m. 2) Inboard engines < 50 HP or <25 GT operating in zone 2. Trawl and purse seines are not allowed, except purse seines with a head rope < 300 m.	Industrial Fisheries : 1) Inboard engine <200 HP or 100 GT operating in zone 3, Purse seining is not allowed except those with a head rope < 600 m. 2) All fishing boats and fishing gear operating in zone 4.
Malaysia	Traditional Fisheries: Small-scale fisheries using traditional fishing gears (i.e. other than trawls and purse seine) with boats less than 10 GT operating in all zones concentrating in zone 1.	Commercial Fisheries : Medium and large scales fisheries using commercial fishing gears such as trawls and purse seines. a) With boats less than 40 GT operating in zone 2. b) With boats from 40 GT to 70 GT operating in zone 3. c) With boats above 70 GT operating in zone 4.
Myanmar	Coastal Fisheries: boats of less than 30 feet or using less than a 12 HP engine operating in zone 1	Industrial Fisheries: Boats more than 30 feet long or using more than 12 HP engines operating in zone 2
Philippines	Municipal Fisheries : Small scale fisheries with boats of less than 3 GT that are allowed to operate in zones 1 and 2.	Commercial Fisheries : a) Small-scale commercial fisheries: from 3.1 to 20 GT boats operating in zone 2; can also operate within 10.1 to 15 km (within zone 1) if authority is granted by the concerned local government unit (LGU). b) Medium-scale commercial fisheries: from 20.1 to 150 GT operating in zone 2; can also operate within 10.1 to 15 km (within zone 1) if authority is granted by the concerned local government unit (LGU). c) Large-scale commercial fisheries: more than 150

		GT operating in zone 2.
Countries	Small-scale Fisheries	Large-scale Fisheries
Thailand	Small-scale Fisheries: With boats of less than 5GT operating in zone 1.	Large-scale Fisheries: With boats of more than 5GT operating in zone 2.
Vietnam	Small-scale Fisheries: Boats with no engine and with engine but less than 40 hp.	Large-scale Fisheries: Boats with engine more than 40 hp.

Using the above information, the following regional definitions of fishing structures (types of fisheries) can be summarized.

COASTAL FISHERIES

“Fishing units operating in coastal waters (from shore out to 3~5 miles).”

The coastal fisheries is a definition of the fisheries by fishing ground or area. There are some States that set a wider fishing range like Indonesia (12 nm), the Philippines (15 km) and Thailand (12 nm) or using different definitions like water depth (Cambodia; 20 m depth). In general, most of the countries regulate the area from the shore to 3 miles for the exclusive use of small-scale fisheries.

SMALL-SCALE FISHERIES

“Fishing units operating using small-scale boats, fishing gear and equipment.”

Small-scale fishery is a definition of the fisheries using fishing boats, fishing gear and equipment as shown in the tables. The capacity of the equipment used varies with the States. The small-scale fisheries are defined and allocated by each State and refer to the fishing grounds most suited to the capacity of the boats used.



Small-scale Fishing Boat in the Philippines

SUBSISTENCE FISHERIES

Although there is no legal definition for subsistence fisheries in most of the State, it is understood as follows:

“Fishing units catching marine products mainly for their own and their family’s consumption”

FISHING CAPACITY RELATED TO OVER CAPACITY

“ The total size of fishing vessels (in terms of GT or remaining stock quantities) used in the particular areas or particular fisheries.”

FISHING EFFORT

“Represents the amount of fishing gear of a specific type (or numbers of fishing unit or total engine capacity of fishing unit) used in the fishing ground over a given unit of time.”

Fishing capacity, fishing effort and fishing pressure are used in a synonymous manner without defining the specific difference.

SUSTAINABLE USE

“Manner of exploitation at the rate that does not lead to the long term decline of the size and diversity of aquatic animals, thereby maintaining their potential to meet the needs and aspiration of present and future generation.”

(MAXIMUM) SUSTAINABLE YIELD

“A technical term in population dynamics. It is a function of fishing effort. If the fishing effort on a fisheries species does not change over a certain length of time, fisheries production of a species is theoretically sustained. Maximum sustainable yield represents the point which produces the highest sustainable production for a certain fishing effort.”

ARTIFICIAL REEF

“Any man-made structure placed in a body of water to attract or lure aquatic animals by providing shelter, habitat or breeding areas, which at the same time have an effect to exclude some fishing operations from the areas.”

Floating types of the artificial reef are called fish aggregating devices and as auxiliary fishing gear are composed of float, fish attracting device, line and sinker.



Artificial Reef

TRANS-BOUNDARY FISH STOCK

Fisheries resources migrate freely across the national boundaries in their life cycle. The following four kinds of migration pattern are important for fisheries management under UNCLOS.

- **Highly migratory fish stock**

“Species which undertake extensive migration between the EEZ and high seas, across oceans and across many EEZs.”

- **Straddling fish stock**

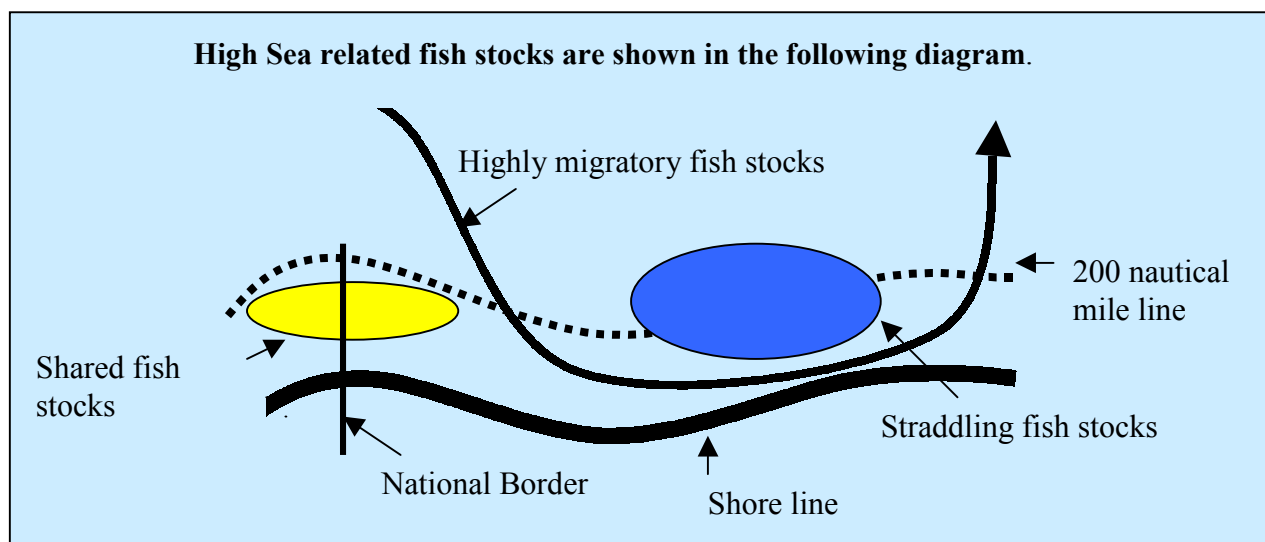
“Species which are distributed or migrate within and beyond the EEZs during their life cycle.”

- **Shared fish stock**

“Species that migrate within an EEZ but extend their migration to other nation’s EEZs.”

HIGH SEAS FISH STOCK

“General term for “highly migratory fish stock and straddling fish stock”



HABITAT

“Can be defined as that part of the ecosystem, including biotic and a biotic components, upon which fish depend directly or indirectly in order to carry out their life process. These may refer to spawning grounds, nurseries, rearing and migration areas. Therefore, habitat is an important component in supporting fish life. Loss of habitat compromises the ability to maintain sustainable long term yield.”

FLAG STATE

“The State in which the vessel is registered and is entitled to fly the flag”.

PORT STATE

“The State has obligations under international maritime law with regard to foreign flag vessels that are in any of its ports and/or at any of its offshore structures.”

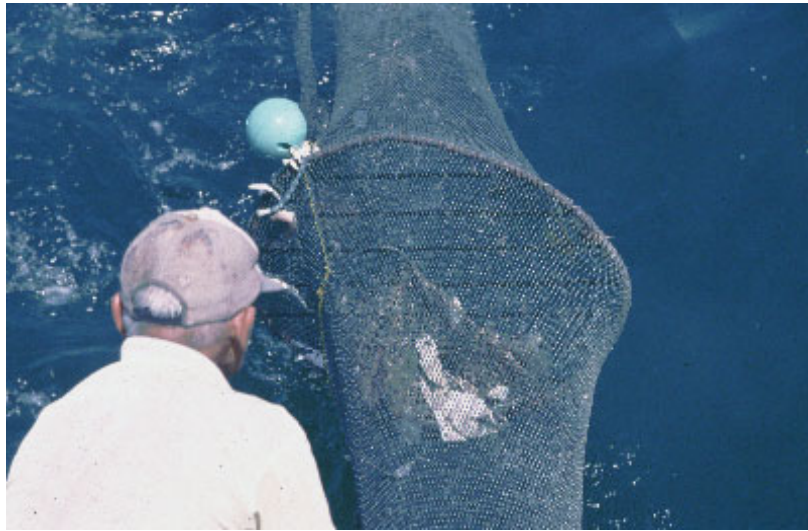
MULTI-SPECIES COMPOSITION

In tropical waters, the species composition in the ecosystem and fish catch is characterized as: 1) large numbers of species; and, 2) low rate of composition of a dominant species compared with those of the Temperate Zone. Large numbers of aquatic organisms co-exist in less productive waters by diversifying the ecological niches. Therefore, multi-species composition may be defined as follows.

“Population which is composed of large numbers of species without a single dominant species.”

RESPONSIBLE FISHERIES

The concept “Encompasses the sustainable utilization of fisheries resources in harmony with the environment; the use of capture and aquaculture practices that are not harmful to ecosystems, resources and their quality; the incorporation of added value to such products through transportation processes meeting the required sanitary standards; the conduct of commercial practices so as to provide consumers access to good quality products.” (Cancun, 1992).



The Operation of Trawl Net with Turtle Excluder Device (TED)

CHAPTER IV: REGIONAL GUIDELINES FOR RESPONSIBLE FISHING OPERATIONS

The Regional Guidelines of the Responsible Fishing Operations was first drafted by the Regional Core Group. It was discussed and agreed during the “Expert Consultation on the Regionalization of the Code of Conduct for Responsible Fisheries Phase 1: Responsible Fishing Operations” organized in Chiang Mai, Thailand between 9-12 November 1998. The current text is a compilation of the outcome of the meeting.

Since the Regional Guidelines for Responsible Fishing Operations was prepared based on the Article 8 Fishing Operations of the Code of Conduct for Responsible Fisheries, the original Article and paragraph numbers were retained in the Guidelines. The Regional Guidelines were prepared in line with the objectives stipulated in Chapter II. The Guidelines are a mix of the composition of 1) general comments for paragraphs from regional points of view, 2) Specific considerations for regional application; and, 3) required follow up activities, if any. The left column is the original paragraph with numbers shown for easy reference, while the modified regional guidelines are shown in the right column for consideration by the States for action.

As the implementation of the CCRF is a long-term commitment and process, the States and relevant Organization should note that the regional guidelines are initial step toward the achievement of sustainable fisheries.

Where a Regional guideline is not provided means that the original CCRF can be applied without change. It should also be noted that the FAO Technical Guidelines for Responsible Fisheries (1) Fishing Operations may also be generally applied to the industrial fisheries in the region.

Article. 8 Fishing Operations	REGIONAL GUIDELINES
<p>8.1 Duties of all States 8.1.1. States should ensure that only fishing operations allowed by them are conducted within waters under their jurisdiction and that these operations are carried out in a responsible manner.</p>	<p>1) Within national waters, fishing operations should be conducted in the juridical waters including provincial, district or municipal waters in a harmonious and responsible manner.</p>
<p>8.1.2. States should maintain a record, updated at regular intervals, on all authorizations to fish issued by them.</p>	<p>1) States that do not have a system of authorizations to fish should urgently establish these to cover at least major fisheries.</p> <p>2) States should investigate their authorization mechanisms to fish and identify areas for improvement. States should also conclude a clear policies on the authorizations to fish and the ways to practically implement them.</p>

	<p>3) Linkages of all Government agencies that separately issue Certificates of Registration and authorization to fish (giving licenses) should be properly coordinated. Data required for each should be simplified and an exchange of information should be made in order to maximize the use of data. (The list of necessary information in FAO Technical Guidelines may be used, although this is mainly for industrial fisheries.)</p> <p>4) Authorizations to fish may also contain conditions, including: 1) areas to be fished. 2) Type of fishing gear allowed. 3) The class of fishing vessel and other requirements; such as, a) depending on the class of fishing vessel, log book, change of registration status, marking of fishing vessel and gear as far as practicable.</p> <p>5) States should also elaborate policy on the enforcement of the authorization to fish by the kind of fisheries, whether provincial or district levels and implement as far as practicable.</p>
<p>8.1.3. States should maintain, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations allowed by them.</p>	<p>1) States should investigate and identify the current constraints of the fisheries statistical system. The mechanisms to improve the system, regional compatibility and standardization should be sought to meet the management requirements on transboundary fish stocks.</p> <p>2) Collection and compilation of catch and effort statistics should be given priority.</p> <p>3) States should elaborate practical reporting mechanisms on the required information provided by the fisher to the concerned agencies (central and local) of the Government.</p> <p>4) SEAFDEC should initiate and maintain its service to improve the regional fisheries statistics mechanisms in collaboration with States and relevant Organizations.</p>
<p>8.1.4. States should maintain, in accordance with recognized international law, within the framework of sub-regional or regional fisheries management organizations or arrangement, cooperate to establish system for monitoring, control, surveillance and enforcement of applicable measures with respect to fishing operations and related activities in waters outside their national jurisdiction.</p>	<p>1) Monitoring, control, surveillance and enforcement for the high seas area can be considered by the relevant organizations. Methodology for monitoring, control, surveillance and enforcement for small-scale and coastal fisheries has to be differentiated with one for industrial or off shore fisheries within national jurisdiction.</p>

<p>8.1.5. States should ensure that health and safety standards are adopted for everyone employed in fishing operations. Such standards should be not less than the minimum requirements of relevant international agreements on conditions of work and service.</p>	<p>1) It should be noted that the minimum requirements in relevant international agreements including SOLAS, IMO which is only applicable to vessels larger than 24m L.O.A.. Since the majority of fishing boats in the region is smaller than this size, States should be encouraged to elaborate special safety standards and policies with emphases on the smaller boats. FAO/ILO/IMCO Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels (1980) may be used as a reference for this paragraph.</p> <p>2) Regional Organizations, including SEAFDEC, should support the States to urgently formulate such standards for smaller fishing vessels in the region.</p>
<p>8.1.6. States should make arrangements individually, together with other States or with the appropriate international organization to integrate fishing operations into maritime search and rescue systems.</p>	<p>None.</p>
<p>8.1.7. States should enhance through education and training programmes the education and skills of fishers and, where appropriate, their professional qualifications, such programmes should take into account agreed international standard and guideline.</p>	<p>1) Considering the importance of the small-scale fisheries sub-sector in the region, education, training and extension should proportionally cover these sectors in addition to those for the industrial fisheries sub-sector. Important and relevant provisions of the Code of Conduct for Responsible Fisheries, including the subject on the Responsible Fishing Practices, should be institutionalized and conducted systematically (both central and local levels) in the existing National Educational Institutions. Target groups for education and training should be not only be professional fishers, but also the young generation and newcomers to fisheries.</p> <p>2) States should define the target groups and develop the appropriate training, materials and mechanisms.</p> <p>5) Since fishing operation is closely related to fisheries management, such education should be conducted, not only to educate on how to operate the required fishing practices, but on the required and appropriate fisheries management measures to accompany fishing operations.</p> <p>3) In addition to education to be conducted at the permanent institutions, training should be conducted in areas closer to the fishers including as refresher courses, fishers who wish to renew their licenses. Training in local dialects is another consideration if the language is a barrier to full understanding by the participants. Education and training programs should take into account the educational level of targeted fishers. Training subjects should not be limited to fishing technology, but should also cover the areas of relevant fisheries management, environmental conservation and local rural development programs.</p>

<p>8.1.8. States should, as appropriate, maintain records of fishers which should, whenever possible, contain information on their service and qualifications, including certificates of competency in accordance with their national laws.</p>	<ol style="list-style-type: none"> 1) Establishment of a similar information base on the coastal/small-scale fisher may be considered in addition to those for industrial fisheries. 2) States should ensure that certificates should be issued for all training offered. These certificates should be authenticated so that it can be a valid document. States should maintain records of certificates issued and that these records should be stored in a readily retrievable format. 3) Certificates should be detailed with the information not only of the name of the issuing authority, personal data, but also its validity and conditions such as size and type of fishing vessels, capacity and areas of operation, possibly related to the authorizations to fish. 4) States should be encouraged to gradually adopt the provisions in ensuring that only trained and certified persons are allowed to engage in fishing, especially in commercial fisheries. 5) The International Convention on Standard of Training, Certification and Watch keeping for Seafarers 1978 may be used as a reference.
<p>8.1.9. States should ensure that measures applicable in respect of masters and other officers charged with offence relating to the operation of fishing vessels should include provisions which may permit, <i>inter alia</i>, refusal, withdrawal or suspension of authorizations to serve as masters or officers of a fishing vessel.</p>	<ol style="list-style-type: none"> 1) In addition to the industrial fisheries (refer to those relevant paragraphs of the FAO Technical Guidelines), practical mechanisms to authorization to fish for small-scale fishers with corresponding responsibility on their conduct may need to be elaborated in National registration systems.
<p>8.1.10. States, with the assistance of relevant international organizations, should endeavour to ensure through educational and training that all those engaged in fishing operations be given information on the most important provisions of this Code, as well as provisions of relevant international conventions and applicable environmental and other standards that are essential to ensure responsible fishing operations.</p>	<ol style="list-style-type: none"> 1) Regional organizations, including SEAFDEC, shall consider formulating training materials and promoting appropriate staff development plans to facilitate the most important provisions of the Code in order to ensure responsible fishing operations in the region. Regional Guidelines will be used as bases for the preparation. 2) Target groups should not only be limited to all those engaged in fishing operation but should include all stakeholders. 3) Awareness building exercises including the importance of Responsible Fishing Practices, sustainable use of resources and environmental considerations should be conducted more frequently.

	<p>4) As has become clear, the international standards or agreements are not always applicable in the regional situation, and therefore appropriate regional strategy should be elaborated in the fields of education and training. In this connection, the Regionalization of the Code of Conduct for Responsible Fisheries, especially the Regional Guidelines can be used as a base for the formulation of regional strategies on education and training for fisher under the new situation.</p>
<p>8.2 Flag State Duties 8.2.1. Flag States should maintain records of fishing vessels entitled to fly their flag and authorized to be used for fishing and should indicate in such records details of the vessels, their ownership and authorization to fish.</p>	<p>1) Flag States should create and maintain mechanisms to collect the required information on their vessels operating in waters of States other than those of the flag State, or on the high seas. FAO technical guideline can be referred to for more detailed information.</p>
<p>8.2.2. Flag States should ensure that no fishing vessels entitled to fly their flag fish on high seas or in waters under the jurisdiction of other States unless such vessels have been authorized to fish by the competent authorities. Such vessels should carry on board the Certificate of Registry and their authorization to fish.</p>	<p>1) There are currently a few competent authorities to authorize fishing on the high seas in the region. Therefore, there may be a need for States whose vessels have operated, or are going to start high sea fisheries, especially tuna fisheries in the Indian Ocean, or for Bluefin tuna, both in the Indian Ocean and the Southern part of the Pacific Ocean, to join the Indian Ocean Tuna Commission (IOTC) in the former case and the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) in the latter case.</p>
<p>8.2.3. Fishing vessels authorized to fish on the high seas or in the waters under the jurisdiction of other States, should be marked in accordance with uniform and internationally recognizable vessel marking systems such as FAO Standard Specification and Guidelines for Marking and Identification of Fishing Vessels.</p>	<p>1) None for the contexts. However marking and identification of fishing vessels is also an important issue for the management of fisheries within national jurisdiction. The issue is, mentioned together with marking of fishing gear in the following paragraph 8.2.4.</p>
<p>8.2.4. Fishing gear should be marked in accordance with national legislation in order that owner of the gear can be identified. Gear marking requirements should take into account uniform and internationally recognizable gear marking systems.</p>	<p>1) It is a prerequisite to the implementation of both the of marking of fishing vessels and fishing gear that the establishment of policies on national authorizations (including license, appropriate registration and fishing rights for coastal fisheries), should be required for all fisheries. Without such policy decisions and required mechanisms, the enforcement of the issues will be extremely difficult.</p> <p>2) Not only fishing gear and fishing vessels but also Fish Aggregating Devices (FADs) such as payaos should be marked.</p>

	<ol style="list-style-type: none"> 3) In order to establish the above policy and the necessary regulatory measures, Government agencies should consult the concerned fisheries sub-sectors and conduct awareness building on the necessity to mark the fishing vessels and fishing gear. Without a good consultative process, problems of cooperation and compliance are likely to increase. 4) International Organizations such as FAO and SEAFDEC may develop the appropriate mechanisms on the authorization to fish as more detailed guidelines and policy papers. 5) The consultation process should extend not only to the fisheries sector, but also concerned Government structures including local Government authorities. 6) The Government agencies should prepare the required regulations (legal instruments) on the mechanism of the authorization to fish and the required detailed guidelines on marking reflecting the outcome of their consultations. 7) States should study the existing marking systems, and where applicable may adopt them into national legislation. Research into gear design, operation and installation which can prevent/reduce gear loss, or which may aid recovery of lost gear should be promoted. 8) The small-scale fishing vessels should also be marked in conformity with nationally recognized marking systems. The provincial code in lettering and/or numbering can be applied to national standard marking systems. Different marking systems between international and national standards will be important to monitor whether the industrial fishing vessels enter coastal waters. 9) Intensive Nationwide Information dissemination on the legal provisions and guidelines on the marking of fishing vessels and gear should be conducted 10) States, prior to the issuance of authorizations to fish, should ensure the owners, managers and fishers comply with the appropriate marking of fishing vessels and gear.
<p>8.2.5. Flag States should ensure compliance with appropriate safety requirements for fishing vessels and fishers in accordance with international conventions, internationally agreed code of practices and voluntary guidelines. States should adopt appropriate safety requirements for all small vessels not covered by such international conventions, code of practice or voluntary guidelines.</p>	<p>Mentioned already in 8.1.5.</p>

<p>8.2.6. States not party to the Agreement to Promote Compliance with International Conservation and Management by Vessels Fishing in the High Seas should be encouraged to accept the Agreement and to adopt laws and regulations consistent with the provisions of the Agreement.</p>	<p>None.</p>
<p>8.2.7. Flag States should take enforcement measures in respect of fishing vessels entitled to fly their flag which have been found by them to have contravened applicable conservation and management measures, including, where appropriate, making the contravention of such measures an offence under national legislation. Sanctions applicable in respect of violations should be adequate in severity to be effective in securing compliance and to discourage violations wherever they occur and should deprive offenders of the benefits accruing from their illegal activities. Such sanctions may, for serious violations, include provisions for refusal, withdrawal or suspension of the authorization to fish.</p>	<p>None.</p>
<p>8.2.8. Flag states should promote access to insurance coverage by owners and charterers of fishing vessels. Owners or charterers of fishing vessels should carry sufficient insurance cover to protect the crew of such vessels and their interests, to indemnify third parties against loss or damage and to protect their own interests.</p>	<p>1) None. However, the insurance covering the operation of smaller boats is an area of consideration in view of either private initiatives or part of social security systems.</p>

<p>8.2.9. Flag States should ensure that crew members are entitled to repatriation, taking account of the principles laid down in the “Repatriation of Seafarers Convention (Revised), 1987, (No.166).</p>	<p>1) However, it should be noted that International Conventions, where they cover the fisheries sector, generally only cover the sub-sector of large-scale fisheries. Therefore, special consideration is required for the fisheries in the region, the major part of which is categorized as small-scale. In applying the Convention, States must first clarify the target group and, if certain target groups are not covered by it, specific regulations in order to cover such groups should be elaborated.</p>
<p>8.2.10. In the events of accident to a fishing vessel or persons on board a fishing vessel, the flag State of fishing vessel concerned should provide details of the accident to the State of foreign national on board the vessel involved in the accident. Such information should also, where practicable, be communicated to the International Maritime Organization.</p>	<p>None.</p>
<p>8.3 Port State Duties 8.3.1. Port State should take, through procedures established in their national legislation, in accordance with international law, including applicable international agreements or arrangements, such measures as are necessary to achieve and to assist other States in achieving the objectives of this Code, and should make known to other States details of regulations and measures they have established for this purpose. When taking such measures a port State should not discriminate in from or in fact against the vessels of any other State.</p>	<p>None.</p>
<p>8.3.2. Port States should provide such assistance to flag States as is appropriate, in accordance with the national laws of the port State and international law, when a fishing vessel is voluntary in a port or at the offshore terminal of port State and the flag State of the vessel requests the port State for assistance in respect of</p>	<p>None.</p>

<p>non-compliance with sub-regional, regional or global conservation and management measures or with internationally agreed minimum standards for preservation of pollution and for safety, health and conditions of work on board fishing vessels</p>	
<p>8.4 Fishing Operations 8.4.1. States should ensure that fishing is conducted with due regard to the safety of human life and the International Maritime Organization, Regulations for Preventing Collisions at Sea, as well as International Maritime Organization requirements relating to the organization of marine traffic, protection of the maritime environment and the prevention of damage to or loss of fishing gear.</p>	<p>1) States should make sure the extent on the benefits and responsibilities of fishers both industrial and small-scale covered in the international regulations. If these are not covered, special action will be required for the fishers in their countries, especially for the small-scale industrial and coastal fisheries sector.</p>
<p>8.4.2. States should prohibit dynamiting and other comparable destructive fishing practice.</p>	<p>1) The States should review the existing laws prohibiting dynamiting, poisoning and other comparative destructive fishing practices including electric stunning. The State should carefully consider the extent of the impact on the environment and take appropriate action for the formulation of a consolidated strategy pertaining that such destructive fishing gear and practices are strictly prohibited under any circumstances and provide legal instruments against such destructive fishing gear and practices.</p> <p>2) In addition, the States should prepare a Comprehensive Program together with legal instruments to eradicate and minimize illegal fishing activities including destructive fishing practices.</p> <p>3) The States should determine criteria to identify fishing gear and practices to be prohibited including the following:</p> <ul style="list-style-type: none"> -Habitat destruction. -High incidental catches including juveniles. -High spawners catch. -Conflict with small scale fisheries. <p>4) SEAFDEC may develop a regional program to eradicate or minimize illegal fishing practices to assist and facilitate national action.</p>

	<ol style="list-style-type: none"> 5) All the destructive fishing and illegal fishing gear and practices should be listed and should be announced to the public. This could be done through printed material including posters, pamphlet or other means. 6) The implementation of the program should be strictly pursued in full cooperation of local Governments. In order to strictly enforce the implementation of the program, certain mechanisms including a team of informants can be created. Whoever contravenes the laws and regulation should be taken to court and inflicted with heavy punishment with a view to daunting them from doing such again, especially in the case of the illegal use of destructive fishing gear and practices. 7) Effective dissemination of the information, public awareness building and education on environmentally friendly fishing practices (Responsible Fishing Practices) should be conducted in extension work and at every opportunity. 8) Mis-conducts of fishing operations are, in many cases, fueled by the no-alternative situation in the coastal areas for fishers to survive. Community-based management programs should be mounted to eradicate such problems with collaborative efforts including identification of diversified employment opportunities in the communities and the establishment of more clear ownership concepts for the fishers. 9) States must ensure that only licensed fishing gear and practices operate in their waters to minimize the use of illegal fisheries practices, as far as practicable.
<p>8.4.3. States should make every effort to ensure that documentation with regard to fishing operation, retained catch of fish and non-fish species and, as regards discards, the information required for stock assessment as decided by relevant management bodies, is collected and forwarded systematically to those bodies. States should, as far as possible, establish programmes, such as observer and inspection scheme, in order to promote compliance with applicable measures.</p>	<ol style="list-style-type: none"> 1) States should consider the evolving needs for information on fishing operations in addition to the statistical data. Required information may cover not only fishing operations and fish stock but also socio-economic data including number of boats and potential catch effort. 2) The competent government authorities in coordination with the fishing industry and competent units of the Government offices in charge of coastal fisheries or appropriate organizations dealing with the management of coastal fisheries should jointly establish the baseline data identified above and implement mechanisms to continuously produce the required data and information. 3) Required information includes various management measures, conflicts between commercial and coastal fisheries, by-catch, retained catch, waste, incidental catch, fishing gear inventory and other problem areas. 4) In responsible fishing operation it becomes important to record discards as all fishing operations are required to minimize discards not only for maintaining bio-diversity but also for conserving aquatic resources. The fishers and the industrial fishing companies should realize the importance of discards and they should be willing, as far as possible, to record discards

	<p>during harvesting. In this connection, fishing logbooks should be simplified so that the crew can fill it out. In small-scale fisheries, it may not be possible, but in certain medium-scale fisheries, the logbook system may be appropriate.</p> <ol style="list-style-type: none"> 5) An enumerator and scientific observer program should be implemented in certain important fishing bases. The enumerators will collect catch data from the landing places, fish auction hall, fishery markets or fishers villages in their areas. Since the enumerators do not go fishing, data on discards will still not be covered. From the scientific observer program, where the observers collect catch data onboard, the discards can be accurately recorded. When the fishing licenses are authorized, an appropriate clause of the obligation for accurate records of discards and performance can be strictly monitored. 6) Qualitative and quantitative information of the composition of discards is vital for fisheries management and conservation of bio-diversity. 7) Research activities to assess the volume, and the composition of discards, should be promoted. In addition, States should promote research on gear design and devices, which could reduce the volume of discards in the total catch. 8) SEAFDEC can further clarify the required specific information, which States should produce periodically, in consultation with its member countries.
<p>8.4.4. States should promote the adoption of appropriate technology, taking into account economic conditions, for the best use and care of the retained catch.</p>	<ol style="list-style-type: none"> 1) The program should be in conjunction with cooperative efforts to facilitate the required changes in technology. 2) In addition, comprehensive awareness building exercises including appropriate training for the fishers should be conducted in order to make them understand the necessity of these applications. 3) Incentives can be considered to encourage fishers to use selective fishing gear. 4) Coastal fishers have been only engaged in the harvesting of fish and not involved in the processing and marketing. In order to retain the optimum benefits from fisheries, create job opportunities in the communities and have wider views on the business, the Government agencies should encourage and support the fishers to expand the scope of their fisheries business at the community level. 5) The required technologies are therefore not limited to fishing technology. Economic research on the flow of fish products from harvest to consumers is important to identify the bottleneck of the distribution channels of fish. 6) States should discourage the use of destructive fishing gear and encourage the use of acceptable fishing gear and practices through a policy of compensatory replacement.

<p>8.4.5. States, with relevant groups from industry, should encourage the development and implementation of technologies and operational methods that reduce discard. The use of fishing gear and practices that lead to the discarding of catch should be discouraged and use of fishing gear and practices that increase survival rates of escaping fish should be promoted.</p>	<ol style="list-style-type: none"> 1) States, that have the technology and equipment for conducting research on the issues, should assist other countries that do not have the capability to develop them within the regional framework. 2) Research effort in relation to fishing technology and equipment should be closely coordinated with the users (fishers). In addition, socio-economic consideration should be fully taken into account when developing responsible fishing gear and practices in view of effective use of the developed methods in reality. 3) In developing selective fishing gear and devices, the survival rate in escape should also be taken into consideration. 4) Unwanted catch and incidental catch sometimes may be reduced if the fishing gear is operated in the correct season and in the right area. Therefore, states should promote research to understand the temporal and spatial distribution of unwanted catch (Juveniles of certain species.) 5) Once the selective fishing gear, selectivity devices, spatial and temporal distributions have been determined, required rules and regulation should be formulated and implemented. 6) Regional organizations, such as SEAFDEC should cooperate in developing fishing technologies that allow the minimization of unwanted catch and incidental catch and increase the survival rates of escaped fish.
<p>8.4.6. States should cooperate to develop and apply technologies, materials and operational methods that minimize the loss of fishing gear and ghost fishing effects of lost and abandoned fishing gear.</p>	<ol style="list-style-type: none"> 1) With respect to offshore fisheries and avoidance of navigational hazards, technology development will be required. In designing fishing gear, technologists must consider parts of the gear (connection ropes with sinkers, entrance parts of traps) that should be replaced with biodegradable materials. 2) Since any improvement will eventually be subject to the good maintenance of fishing gears by fishers, systematic dissemination of the information and awareness building exercises including training on reasons for such gear and maintenance are required, including the impact of gear loss and ghost fishing on resources and the environment. 3) States should attempt to establish methods of identifying owners of abandoned fishing gear and obtain reasons why the gear was abandoned. Punitive action needs to be considered where appropriate. 4) Dumping old gear at sea should be prohibited. States should provide dumping stations at ports or appropriate places in the fishing bases. 5) Those who encounter lost or abandoned fishing gear should, to the extent possible, recover it and take it to port. If the gear recovery fails, details of the gear and the position should be reported to the competent authorities.

	<p>6) States can establish a recycling program of used fishing gear in order to reduce gear dumping and encourage incidentally retrieved gear or gear parts. However, in pursuing such programs, the economic and local technological level should be fully considered.</p> <p>7) To avoid the lost or abandoned netting, fishing gear being influenced by the current, the utilization of appropriate design parameters of netting (mesh size, twine diameter, hanging coefficient and dimension) and also rigging system (floats, ballasts, wires and ropes) are required with a view to minimizing the net resistance so that the fishing gear can withstand the pressure of the current, if the oceanographic situation is known.</p> <p>8) A fishing vessel should conduct its own operation so as not to interfere with the operation of other fishing vessels or fishing gear already set. A fishing vessel should also not dump in the sea, any substance, which may interfere or obstruct or cause damage to fish, fishing gear, other fishing vessels or the aquatic environment.</p>
<p>8.4.7. States should ensure that assessment of the implications of habitat disturbance are carried out prior to the introduction on a commercial scale of new fishing gear, methods and operation to an area.</p>	<p>1) States should establish a systematic communications link with representatives of industrial fisheries for various consultations not only on their new activities but also various consultations in achieving sustainable fisheries in the countries.</p> <p>2) In order to monitor and rehabilitate degraded coastal habitats including coral reefs, mangrove forests, sea-grass beds, the Government, both central and local levels, should initiate strategies and action plans. These programs should include research, law enforcement, education, information dissemination and public awareness building activities.</p> <p>3) Many important habitats are located in shallow water areas, therefore, assessment in this area should be given higher priority.</p> <p>4) When evaluating the inputs of a new fishing technology, habitat disturbance is one of the environmental and ecosystem factors which should be taken into account, beside other factors such as bio-diversity, and contamination and pollution, generation of debris and rubbish, direct mortality and predator-prey relationships.</p> <p>5) Habitat disturbance may easily occur in demersal fisheries. Therefore, the States should be encouraged to initiate research into the extent of habitat disturbance caused by such active demersal fishing gear as bottom trawls.</p>
<p>8.4.8. Research on the environmental and social impacts of fishing gear and, in particular, on the impact of such gear on biodiversity and coastal fishing communities should be promoted.</p>	<p>1) Considering the sensitivity of bio-diversity in the multispecies composition in tropical waters, special consideration should be given to destructive fishing gear and practices which have serious effect upon the bio-diversity in the fragile ecosystem.</p> <p>2) Considering the economic disadvantages of the small-scale/coastal fishers, promotional programs including Governmental incentives will have to be considered if their fishing gear has to be changed to environmentally friendly alternatives.</p>

	<p>3) Assessment on fishing gear and fishing practices should be integrated and use the multidisciplinary approach so that it can cover the various aspects of its impact. Formulation of a working group or team among researchers from various related fields should be promoted. Findings and suggestions of the group should be properly used or implemented by the appropriate competent authority. Necessary funding should be allocated.</p> <p>4) The operation of a fishing gear, particularly in coastal waters, may cause social conflicts between different users of the same aquatic resources. The social conflicts occur due to the different productivity of fishing gear, where the active fishing gear catch a lot more than passive fishing gear and, in turn, influences the income of fishers. The social changes as the consequence of the operation of one fishing gear against another fishing gear should be assessed as to whether it leads to social conflict between fishers of different fisheries.</p>
<p>8.5 Fishing Gear Selectivity 8.5.1. States should require that fishing gear, methods and practices, to the extent practicable, are sufficiently selective so as to minimize waste, discards catch on non-target species, both fish and non-fish species, and impacts on associated or dependent species and that the intents of related regulations is not circumvented by technical devices. In this regard, fishers should cooperate in the development of selective fishing gear and methods. States should ensure that information on new development and requirements is made available to all fishers.</p>	<p>1) In tropical fisheries, States should develop and introduce fishing gear and practices that can reduce/exclude the incidental catch to the extent practicable. Prior to the approval of licenses or authorizations to fish, the appropriate agency of the Government should check whether applying fishers are using the appropriate selective and environmentally friendly and safe fishing gear and practices both for new and existing methods of fishing.</p> <p>2) The introduction of new fishing gear, practices and methods should first be studied to assess the impact on the environment and fisheries resources.</p> <p>3) Research results of selective fishing gear and practices must be disseminated to the potential users. The selective fishing gear and practices should be promoted to the fishers by informing them the advantages and disadvantages of selectivity. The fishers should be persuaded to actively participate in developing the selectivity.</p> <p>4) SEAFDEC, as a regional organization may actively coordinate with various national institutes and promote the introduction of the fishing gear selectivity within the region.</p> <p>5) The community-based approach should be applied when introducing new selective fishing gear and methods to the fishers.</p> <p>6) Fish behavior study should be given utmost priority. Special consideration should also be given in areas where abundant juveniles exist and appropriate action including declarations of closed areas and seasons to fish should be taken. In general, States should set a clear policy on the minimization of incidental catch including juveniles and aquatic animals.</p> <p>6) Demonstrations of the use of selective fishing gear and devices should be continuously carried out to gain confidence among the fishers. Giving incentives to the volunteers could be considered.</p>

<p>8.5.2. In order to improve selectivity, State should, when drawing up their laws and regulations, take into account the range of selective fishing gear, methods and strategies available to the industry.</p>	<ol style="list-style-type: none"> 1) Provision of selective but viable fishing gear should be made to ensure sufficient income of the fishers to improve their standard of living and to allow effective conservation and management measures. 2) Representatives of the relevant fisheries sector such as fisher's organizations and industrial fishing companies (associations) should be invited to participate in the process of drafting laws and regulations. Such laws and regulations for the proper protection and management of the fisheries resources and aquatic environment, sustainable production within the ecological limit will be ensured. 3) Finalizing and issuing laws and regulations is solely the State's responsibility. However, the State should consider the involvement of all stakeholders in the planning and drafting procedure of laws and regulations. 4) States should consider a special article in its legal instruments on gear selectivity with respect to reducing, in general, the incidental catch and giving special consideration to the trawl fisheries with respect to reducing waste, with appropriate policies on sustainable fishing operations. The following are examples for consideration: <ul style="list-style-type: none"> - Laws on allowable mesh size and structure of nets. - Laws on the limit of juveniles and endangered species composition in the retained catch in the net. - Laws on the prohibition of fishing operation of the species during spawning periods. - Laws on the demarcation of fishing areas in accordance with the types of fishing boats and gear employed. 5) Developing selective fishing gear, methods and strategies does not always means developing new ones that have already been invented in developed countries. To some extent, the selective fishing gear, methods and strategies may exist in the national fisheries in the region. These can be found through a comprehensive inventory of the existing traditional fishing gear and methods. The performance of some or all existing traditional fishing gear should be inventoried aiming at obtaining the current selectivity level of the fishing gear and methods. 6) The current main objectives of the inventory of fishing gears and practices such as efficiency and productivity should be changed and used as a tool for fisheries conservation and management. States should be encouraged to initiate evaluation of selectivity of existing traditional fishing gear and practices. 7) The selectivity of fishing gear and methods should be considered from the aspect of multidisciplinary, i.e., biological, technological, socio-economic, techno-economic, and legal aspects. Among these aspects, to the fishers and industrial companies, the socio- economic aspect which deals in economic performance and employment is the most important.
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<p>8.5.3. States and relevant institutions should collaborate in developing standard methodologies for research into fishing gear selectivity, fishing methods and strategies.</p>	<p>1) In order to minimize incidental catch, unwanted catch that is bound to become discarded, special consideration should be paid to economic and marketing research for the discards especially for the catch by shrimp trawl fishing. Research activities including those hereunder will be considered to solve the problems:</p> <ol style="list-style-type: none"> 1) Fish behaviour studies 2) Development of selective fishing gear and practices. 3) Marketing study on target and non-target species. 4) Study on operational parameters (duration of fishing trip, mother boat operation). 5) Investigation of facilities on the vessels (facility and capacity of the preservation of catch, size of fish-hold, etc.). 6) Study on the survival of escaped fish 7) Study on the economic effect of using selective fishing gear and devises. <p>2) Regional organizations such as SEAFDEC should take the initiative to develop standard methodologies for research into fishing gear selectivity, fishing methods and required strategies in collaboration with the ASEAN member countries (Concerned fisheries agencies in collaboration with academic and other relevant institutions in each countries). In preparing standard methodologies and strategies, the regional specific situation should be fully taken into account.</p>
<p>8.5.4. International co-operation should be encouraged with respect to research programmes for fishing gear selectivity, and fishing methods and strategies, dissemination of the result of such research programmes and transfer of technology.</p>	<p>1) Regional organization such as SEAFDEC should take a lead to promote international (regional) cooperation among its members and ASEAN member countries on the research program, strategy and dissemination of the research outputs. Examples of such cooperation are CRAFT and NETFIX network.</p> <p>2) While cooperation with countries in the Temperate Zone who have a great amount of experience and technology will be continued, it should be noted that the application of technologies and adoption of strategies developed in the Temperate Zone might require critical assessment. Gear technology requires a great amount of knowledge on fish behavior and other ecological factors that are specific to tropical ecosystems.</p> <p>3) Research on the multi-species composition in the catch and resources will be the area of important technical/policy research to clarify the specific situation of tropical fisheries.</p> <p>4) States should encourage the establishment of a communication network between researchers in the region.</p> <p>5) For the promotion of responsible fishing operations, research on selective fishing gear and methods including required devices should be encouraged.</p> <p>6) Research on the selectivity of trawls and purse seines should be given priority.</p>

<p>8.6 Energy optimization 8.6.1. States should promote the development of appropriate standards and guidelines which leads to the more efficient use of energy in harvesting and post harvest activities within the fisheries sector.</p>	<p>1) States should set up guidelines to use appropriate engines for various types and sizes of fishing vessels which is particularly applicable to small fishing boats that comprise the majority of fishing vessels in the region.</p>
<p>8.6.2. States should promote the development and transfer of technology in relation to energy optimization within the fisheries sector and, in particular, encourage owners and managers of fishing vessels to fit energy optimization devices to their vessels.</p>	<p>None.</p>
<p>8.7 Protection of the Aquatic Environment 8.7.1. States should introduce and enforce laws and regulation based on the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL. 73/78).</p>	<p>None.</p>
<p>8.7.2. Owners charterers and managers of fishing vessels should ensure that their vessels are fitted with appropriate equipment as required by MARPOL. 73/78 and should consider fitting a shipboard compactor or incinerator to relevant classes of vessels in order to treat garbage and other shipboard wastes generated during the vessel's normal service.</p>	<p>1) When necessary, States can elaborate their programs in consultation with industry for promoting and facilitating the relevant technology and equipment in the medium term to reduce emissions of ozone depleting substances.</p>
<p>8.7.3. Owners charterers and managers of fishing vessels should minimize the taking aboard of potential garbage through proper provisioning practices.</p>	<p>None.</p>

<p>8.7.4. The crew of fishing vessels should be conversant with proper shipboard procedures in order to ensure discharges do not exceed the levels set by MARPOL 73/78. Such procedures should as a minimum, include the disposal of oily waste and the handling and storage of shipboard garbage.</p>	<p>None.</p>
<p>8.8 Protection of the atmosphere 8.8.1 States should adopt relevant standard and guideline which include provisions for the reduction of dangerous substances in exhaust gas emission.</p>	<p>None.</p>
<p>8.8.2. Owners, charterers and managers of fishing vessels should ensure that their vessels are fitted with equipment to reduce emissions of ozone depleting substances. The responsible crew members of fishing vessels should be conversant with the proper running and maintenance of machinery on board.</p>	<p>1) When necessary, States can elaborate their programs in consultation with industry for promoting and facilitating the relevant technology and equipment in the medium term.</p>
<p>8.8.3. Competent authorities should make provision for phasing out of the use of chlorofluorocarbons (CFCs) and transitional substances such as hydrofluorocarbons (HCFCs) in the refrigeration system of fishing vessels and should ensure that the shipbuilding industry and those engaged in the fishing industry are informed of and comply with such provision.</p>	<p>1) SEAFDEC as a regional fisheries organization may initiate appropriate training programs on refrigeration systems using appropriate refrigerants in order to provide a clear understanding of the problems involved for further promotional work in each participant's country.</p> <p>2) When necessary, States can elaborate their programs in consultation with industry for promoting and facilitating the relevant technology and equipment in the medium term.</p>
<p>8.8.4. Owners or managers of fishing vessels should take appropriate action to refit existing vessels with alternate refrigerants to CFCs and HCFCs and alternatives to Halons in fire fighting installations. Such alternatives should be used in specifications for all new fishing vessels.</p>	<p>1) States should establish close linkages with domestic and foreign manufacturers and engineering firms to establish more practical strategies on the installation and importation of refrigeration and fire fighting equipment into the country and take more proactive action to solve the problem.</p>

<p>8.8.5. States and owners, charterers and managers of fishing vessels as well as fishers follows international guidelines for the disposals of CFCs, HCFCs and Halons.</p>	<p>None.</p>
<p>8.9 Harbours and landing places for fishing vessels 8.9.1. States should take into account, <i>inter alia</i>, the following in the design and construction of harbours and landing places:</p> <ol style="list-style-type: none"> 1) That safe havens for fishing vessels and adequate servicing facilities for vessels, vendors and buyers are provided; 2) That adequate fresh-water supplies and sanitation arrangement should be provided; 3) Waste disposals systems should be introduced, including for the disposal of oil, oily water and fishing gear. 4) Pollution from fisheries activities and external sources should be minimized; and 5) Arrangement should be made to combat the effects of erosion and siltation. 	<ol style="list-style-type: none"> 1) States should further elaborate the Code of Conduct in order to take appropriate actions for sustainable fisheries development taking into account the specific situation in the country including as more comprehensive requirement of supplies and fundamental facilities which have to be identified i.e. cleaning water, ice etc. 2) Sustainable development of inland fisheries which is a very important sub-sector in the region, has to be fully taken into account not only for this paragraph but for other elements which are relevant to inland fisheries. 3) State should take into account the needs of local boats (numbers and size of fishing boats) and suitable places for construction of harbours and landing places.
<p>8.9.2 States should establish an institutional framework for selection or improvement of sites for harbours for fishing vessels, which allows for consultation among the authorities responsible for coastal area management.</p>	<ol style="list-style-type: none"> 1) Criteria for site selection for the construction of harbours and landing places must be carefully elaborated including protection and avoidance of erosion and silting, ideal locations where port facilities are fully utilized etc. 2) For the planning and construction of harbours, consultation with all users and stakeholders will be required.
<p>8.10 Abandonment of structures and other materials 8.10.1. States should ensure that the standards and guidelines for the removal of redundant offshore structures issued by the International Maritime Organization are followed. States should also ensure that the competent fisheries authorities are</p>	<ol style="list-style-type: none"> 1) States in coordination with concerned Government agencies, should prepare guidelines for the removal of artificial structures such as Artificial Reefs, FADs and stationary nets, installed and abandoned in offshore as well as inshore waters. Fisheries authorities should include in their regulations the installation and abandonment of such structures. The owners should inform the authorities whenever structures are installed or abandoned for the sake of navigation and fishing operations and the avoidance of accidents. Penalties should be imposed by coastal states to ensure compliance with the regulations.

<p>consulted prior to decisions being made on the abandonment of structures and other materials by the relevant authorities.</p>	
<p>8.11 Artificial reefs and fish aggregation devices 8.11.1. States, where appropriate, should develop policies for increasing stock population and enhancing fishing opportunities through the use of artificial structures, placed with due regard to the safety of navigation, on or above the seabed or at the surface. Research into the use of such structures, including the impacts on living marine resources and the environment, should be promoted.</p>	<ol style="list-style-type: none"> 1) In addition to the development of national policies, Regional organizations such as SEAFDEC should initiate regional policy and guidelines on Artificial Reefs and Fish Aggregating Devices in collaboration with its member countries, since the topological and ecological situation of the aquatic environments are different to the Temperate Zone. 2) Research work should be promoted with the objectives of coastal fisheries management. Considering the effect of either structures or materials, target areas should not be limited only to Artificial Reefs and Fish Aggregating Devices but also to such facilities as maricultures and stationary nets and other artificial structures in the aquatic environment which have one or more effect on the following: <ul style="list-style-type: none"> - Effect to aggregate fish schools. - Effect to attract spawners. - Effect to limit certain fishing activities in the areas. - Effect to promote the ownership concept over the water surface by the fishers. 3) It should be understood that Artificial structures or materials may have relatively positive effects on resource enhancement and fisheries management in view of the scarcity of natural reefs in the waters of the region.
<p>8.11.2. States should ensure that, when selecting the materials to be used in the creation of artificial reefs as well as selecting the geographical location of such artificial reefs, the provisions of relevant international conventions concerning the environment and safety of navigation are observed.</p>	<p>None.</p>
<p>8.11.3. States should within the framework of coastal area management plans, establish management systems for artificial reefs and fish aggregation devices. Such management systems should require approval for the construction and development of such reefs and devices and should take into account the interests of fishers, including artisanal</p>	<ol style="list-style-type: none"> 1) States should prepare legal frameworks to regulate and manage both Artificial Reefs and Fish Aggregating Devices (FADs) in collaboration with end users/fishers. Areas of concern should be concentrated on navigational hazards, excessive numbers of Fish Aggregating Devices (FADs) which lead to over-fishing and catch of juvenile tuna and environmental impact including change of water flows and erosion. 2) The Fish Aggregating Devices (FADs) placed in the high seas, exclusive economic zones (EEZs) or archipelago seas also needed to be marked to identify its owner and position. For owner identification, a FAD should be marked with an International Telecommunication Union Radio Call Sign

<p>and subsistence fishers.</p>	<p>(IRCS) which identifies the name and address of the owners. For position identification, a FAD should be marked with an electronic device (transponder or radio beacon), a radar reflector, or lamp as well as flags and/or shapes.</p> <p>3) Consultation processes with fishing communities on the deployment of artificial reefs should be undertaken because of the impact of these structures on their fishing activities and livelihood.</p>
<p>8.11.4. States should ensure that the authorities responsible for maintaining cartographic records and charts for the purpose of navigation, as well as relevant environmental authorities, are informed prior to the placement or removal of artificial reefs or fish aggregating devices.</p>	<p>1) With respect to artificial reefs placed in coastal waters, the coastal communities, in particular fisher organizations, should be well informed through notification of the existence of such structures. Where necessary, the establishment of reasonable safety zones around the artificial reefs, not exceeding a distance of 500 m can be applied. This safety zone does not mean a closed fishing area, but to warn the fisher not to operate certain fishing gear that are easily damaged by the structure.</p> <p>2) With respect to FADs, the local fisher’s organizations should be well informed through notification about the existence of FADs in their fishing areas so that they can avoid such devices for the safety of their fishing operations.</p> <p>3) Information on the deployment of artificial reefs and FADs should be given to the appropriate agencies. These agencies should also be informed when the FADs have been lost or have been removed with view to updating the records.</p> <p>4) SEAFDEC may initiate regional information on the location of Artificial Reefs and Fish Aggregating Devices through its ATLAS upon request and collaboration by the State.</p>

CHAPTER V: FOLLOW-UP ACTIVITIES

REGIONAL NETWORK OF FISHING TECHNOLOGISTS

During the Expert Consultation on the Regionalization of the Code of Conduct for Responsible Fisheries, the establishment of a Regional Network of Fishing Technologists (with its sub Regional Network of the Network of Fishing Gear Technologist) was agreed as a mechanism to expedite regional research and related work through E- mail connection among the researchers in each technical subject.

FOLLOW UP ACTIVITIES

As mentioned above, the regional guidelines for Article 8 of the CCRF is a first step in the long process toward achievement of sustainable fisheries in the Southeast Asian region. States may take necessary action to appropriately manage the fisheries in their countries utilizing the regional guidelines as a base. These may include 1) to set up various working groups for the required areas further clarifying the issues, 2) to appropriately improve the national legal instruments, 3) to promote the required research in order to identify more detailed information, 4) to prepare technical guidelines to further clarify the specific subjects and, 5) to initiate various action identified in the process of the preparation of the regional guidelines.

Among the various activities, the States may take immediate action on the required research providing each State with a more clear understanding and detailed information on the issues and may eventually facilitate prioritized State action toward the achievement of sustainable fisheries. The following are a list of research in support of the implementation of the CCRF in the region, identified through the process of the preparation of the regional guidelines.

Policy Research

General Principles. Verification of each article of the relevant international instruments,

- 8.1.2. Authorization mechanisms to fish
- 8.2.1. Identification of required information other than fisheries statistics data
- 8.4.4. Socio-economic analysis on the adaptability of selective fishing gear
- 8.4.5. Exchange of research capability in the region
- 8.4.7. Research on degraded coastal habitats
- 8.10.1. Guidelines for the removal of artificial structures
- 8.11.1. Research work on artificial reefs in line with coastal fisheries management

Technical Research

- 8.1.3. Improvement of the fisheries statistical system
- 8.2.4. Review of the existing marking systems
- 8.4.2. Criteria to identify illegal fishing gear and practices
- 8.4.3. Qualitative and quantitative information of the composition of discards
- 8.4.3. Promotion of selective fishing gear designs and devices
- 8.4.4. Improvement of survival rate of escaping fish in the designing of gear
- 8.4.6. Research to avoid ghost fishing.
- 8.4.6. Research on the extent of habitat disturbance caused by fishing gear
- 8.5.1. Research on the discard from shrimp trawl fishing
- 8.5.1. Fish behaviour studies



- 8.5.2. Reviews of traditional fishing
- 8.5.3. Research on multi-species composition
- 8.5.4. Research on the selectivity of trawls and purse seines

SEAFDEC, as a regional organization, in collaboration with its member countries, will further develop programs to facilitate the implementation of the CCRF in the region. Among which, the following can be the potential areas for SEAFDEC programs identified through the process of the preparation of Regional Guidelines.

Improvement of fisheries statistics (Para. 8.1.3.): Existing SEAFDEC Programs on the Fisheries Statistics can be further improved.

Safety standards of small scale fishing boats (Para. 8.1.5.): Appropriate Programs can be developed in collaboration with the regional core group.

Development of training material in line with the CCRF (Para.8.1.10.): Preparation of training materials in line with the CCRF is already planned.

Authorizations to fish (Para.8.2.4.): Existing mechanisms as the Working Group for Policy Formulation can take the subject as an initiative in collaboration with the FAO. In addition, existing programs on “ Sustainable Management for Coastal Fisheries (MSCF)” can take the issue into its program.

Illegal fishing (Para.8.4.2.): Programs on the preparation of fishing gear monographs can be expanded.

Specific contents of fishing information (Para.8.4.3.): Existing mechanisms as the Working Group for Policy Formulation can take the subject as an initiative.

Minimization of unwanted and incidental catch (Para.8.4.5.): Existing programs to promote “Juvenile and Trash Fish Excluder Device (JTED)” can cover this issue.

Promotion of Fishing Gear Selectivity (Para 8.5.1.): Through the Network of Fishing Gear Technologists and Cooperative Research for Fishing Gear Technology in Asia (CRAFT), research work on fishing gear selectivity will be promoted.

Standard methodologies for research on gear selectivity (Para. 8.5.4.): Through the Network of Fishing Gear Technologist and Cooperative Research for Fishing Gear Technology in Asia (CRAFT), standardization of methodology on fishing gear selectivity will be promoted.

Environmentally friendly refrigeration training (Para. 8.8.3.): Appropriate training courses can be programmed into the regular program activities.

Regional policy on artificial reefs (Para.8.11.1.): Existing mechanisms as the Working Group for Policy Formulation can take a leading role in collaboration with MFRDMD of SEAFDEC and member countries.

Utilization of the digitized ATLAS for the location of Artificial reefs (Para 8.11.4.) : Existing Program on the Regional ATLAS can be expanded to cover the issues upon request and in cooperation with member countries.

At the conclusion of the “Expert Consultation on the Regionalization of the Code of Conduct for Responsible Fisheries Phase 1: Responsible Fishing Operations” from 9-12 November 1998 in Chiang Mai, Thailand. States participating and SEAFDEC have confirmed the commitment of their Governments and organizations for the effective implementation of the CCRF through their activities including the foregoing.



Group Photo of Fishing Gear Experts

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