

# Boosting Sustainable Development and Management of Marine Capture Fisheries in Southeast Asia

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The establishment of the Southeast Asian Fisheries Development Center (SEAFDEC) in 1967 was primarily gauged on the vital need to promote fisheries development in order to increase food supply and improve nutritional standards by increasing the supply of animal (fish) protein in the Southeast Asian region. Five Technical Departments have since then been set up in five SEAFDEC Member Countries with corresponding roles and responsibilities in pursuing such target. Three Technical Departments have concentrated their efforts on the sustainable development and management of marine and coastal fisheries in Southeast Asia. The Training Department (TD) has been focusing its efforts on the development of modern fishery techniques to aid regional fisheries in a more sustainable approach through the promotion of responsible fishing technologies and practices, exploration of marine resources, and advancement of the coastal fisheries management approach. Recent emphasis has been placed by TD on the promotion of coastal fisheries management to ensure responsible resource utilization and sustainable livelihoods in coastal communities, as well as on the exploration of off-shore fisheries through the development of best fishing practices and energy optimization technology to ensure stable supply of food fish and reduce fishing pressure in coastal areas. At the initial stages of its operation, the Marine Fisheries Research Development (MFRD) had been carrying out R&D activities on marine fishery resources evaluation and oceanographic studies until the mid-1970s when its thrusts had been shifted to post-harvest technology development. Meanwhile, the Marine Fishery Resources Development and Management Department (MFRDMD) conducts R&D activities on marine fishery resources focusing on biological studies of commercially important fish species, resource assessment and management, and conservation and management of aquatic species under international concern. In addition, MFRDMD also compiles information on small pelagic fish species, and develops indicators that could be used for the sustainable development and management of fisheries. Through the activities carried out by these SEAFDEC Departments while adhering to directives of the SEAFDEC Council of Directors and relevant international and regional instruments, sustainability in marine capture fisheries has been taking shape in the region leading to enhanced production from the fisheries and improved socio-economic benefits for stakeholders, more particularly the small-scale fishers.

During the past 40 years or so, the Southeast Asian countries had been producing significant amounts of fish not only to feed its people but also to improve the countries' economies. Although the total fisheries production of the region had been slowly growing at the rate of about 15% per year in the early 70s to mid-80s, it increased to 21%/year in the following decade, and more than 28%/year in the succeeding decade until the mid-2000s, after which the increase continued to go uphill reaching 38%/year during the period from 2009 to 2012 (**Table 1**). Correspondingly, production from marine capture fisheries also continued to increase although at a much slower pace.

The continuously increasing fisheries production of the region could have been brought about by many factors, *e.g.* improved fisheries and aquaculture technologies and management; increased awareness of stakeholders on responsible fisheries with increasing efforts in resources conservation; improved national regulations on sustainable fisheries management; adherence to international and regional guidelines and instruments on sustainable fisheries development and management; enhanced institutional and human resource capabilities; improved statistical data collection systems. For its part, SEAFDEC has contributed in one way or another, to such increases in fisheries production.





### Major Fish Producing Countries of Southeast Asia

In the early 70s until the early 80s, four Southeast Asian countries, namely: Thailand, Indonesia, Philippines and Viet Nam collectively contributed an average of more than 90%/year to the region's total fisheries production. Malaysia entered into the picture starting in the mid-80s and together with the aforesaid four countries collectively contributed about 99%/year to the region's total fisheries production until the early 2000s. Then, starting in mid-2000s, Myanmar joined the region's group of top producing countries, and altogether, these countries contributed about 98%/year to the region's total fisheries production. Since then, the major fish producing Southeast Asian countries had been dominated by Indonesia, Thailand, Philippines, Viet Nam, Myanmar, and Malaysia.

During the five-year period from 2008 to 2012, the Southeast Asian countries accounted for an annual average of 22% of the world's total fisheries production (**Table 2**). This signifies the important role that Southeast Asian fisheries play in the overall fisheries production of the world, and in which case, there is a need to manage the region's fisheries towards sustainability in order that its contribution to the food security of the region could be sustained if not enhanced, the countries' economies are improved, and the region's current niche in the overall global fisheries production is secured.

Furthermore, increases in the region's total fisheries production value had been steady from the mid-70s until the mid-90s, but a drastic rise occurred in the mid-90s until the late 2000s and early 2010s when the rate of increase has more than doubled as shown in **Table 1**.

Table 1. Trend of fisheries production with marine capture production in Southeast Asia (1974-2012):  
Quantity in 1,000 metric tons (MT); Value in 1,000,000 US\$

	1974- 1978 <sup>a</sup>	1979- 1983 <sup>a</sup>	1984- 1988 <sup>a</sup>	1989- 1993 <sup>a</sup>	1994- 1998 <sup>b</sup>	1999- 2003 <sup>b</sup>	2004- 2008 <sup>c</sup>	2009- 2012 <sup>c</sup>
<b>Total Fisheries Production of Southeast Asian (five-year averages)</b>								
Quantity	6,395.1	7,457.9	8,809.7	11,024.4	14,208.9	17,983.3	24,159.8	33,352.6
Value	2,567.1	4,127.3	4,361.5	5,307.0	8,244.9	11,802.8	19,910.6	39,175.3
<b>Marine Capture Fisheries Production of Southeast Asia (five-year averages)</b>								
Quantity	5,543.1	5,860.6	6,867.5	8,377.7	9,852.0	12,255.0	13,755.6	14,925.3
Value	2,082.9	3,075.4	2,791.3	3,086.8	4,410.0	6,415.7	9,469.4	16,885.8

Sources: SEAFDEC (1980), SEAFDEC (1984), SEAFDEC (1987), SEAFDEC (1992), SEAFDEC (1994), SEAFDEC (1997), SEAFDEC (2002), SEAFDEC (2006), SEAFDEC (2010), SEAFDEC (2014)

a Not including Lao PDR and Myanmar (Note: production from Hong Kong and Taiwan deducted from totals)

b Not including Lao PDR (Note: production from Hong Kong and Taiwan deducted from totals)

c For 10 Southeast Asian countries, including Lao PDR (land-locked country) for Total Production only



Table 2. Contribution of Southeast Asian fisheries production to the global fisheries production (in thousand MT)

	2008	2009	2010	2011	2012
<b>Global Fisheries Production (FAO, 2014)</b>					
Capture: marine	79,900.0	79,600.0	77,800.0	82,600.0	79,700.0
Capture: inland	10,300.0	10,500.0	11,300.0	11,100.0	11,600.0
Aquaculture	52,900.0	55,700.0	59,000.0	62,000.0	66,600.0
<b>Total Global Fisheries Production</b>	<b>143,100.0</b>	<b>145,800.0</b>	<b>148,100.0</b>	<b>155,700.0</b>	<b>157,900.0</b>
<b>Southeast Asian Fisheries Production (SEAFDEC, 2014)</b>					
Capture: marine	13,814.4	14,140.4	14,847.5	15,095.5	15,590.7
Capture: inland	2,329.5	2,397.3	2,377.3	2,641.1	2,820.0
Aquaculture	11,063.9	12,379.4	14,186.7	15,751.1	21,160.5
<b>Total SEA Fisheries Production</b>	<b>27,207.8</b>	<b>28,917.1</b>	<b>31,411.5</b>	<b>33,487.7</b>	<b>39,571.2</b>

Sources: FAO (2014); SEAFDEC (2014)

This could have been due to the corresponding annual increases in production, but most especially in view of the improvements made by the Southeast Asian countries in terms of the quality of fish and fishery products, especially those that are bound for the major importing countries as well as those exported within the region.

Specifically in 2012, Thailand and Viet Nam were among the top ten of the world's exporters of fish and fishery products, occupying the third and fourth places, respectively, with average annual percentages in 2001-2012 of 8.1% for Thailand, and 11.9% for Viet Nam (FAO, 2014).

### Status and Trend of Marine Capture Fisheries in Southeast Asia

In the marine capture fisheries sub-sector, production in terms of quantity and value had also been increasing during the 40-year period but at a rather slower pace (Fig. 1). For the Southeast Asian region, Thailand, Philippines,

Indonesia, and Viet Nam were the highest producers of fish from marine capture fisheries from 1974 to 1983, joined by Malaysia from 1984 and by Myanmar from 1994 up to the present.

In the global scene, six Southeast Asian countries were among the 15 major marine fisheries producing countries in 2012 with Indonesia ranking second after China, Viet Nam in the 9<sup>th</sup> place, Myanmar in the 10<sup>th</sup>, Philippines in the 12<sup>th</sup>, Thailand in the 14<sup>th</sup>, and Malaysia in the 15<sup>th</sup> place (FAO, 2014). For the Southeast Asian region, Indonesia ranked first followed by Thailand, Philippines, Viet Nam, Malaysia, and Myanmar (SEAFDEC, 2014).

The continuously increasing fish production from marine capture fisheries by Indonesia might have been influenced by sustained increases for the past 40 years in its production of six (6) major groupings of marine aquatic species, namely: tunas; red fishes, basses, congers, etc.; jacks, mullets, sauries, etc.; mackerels; herrings,

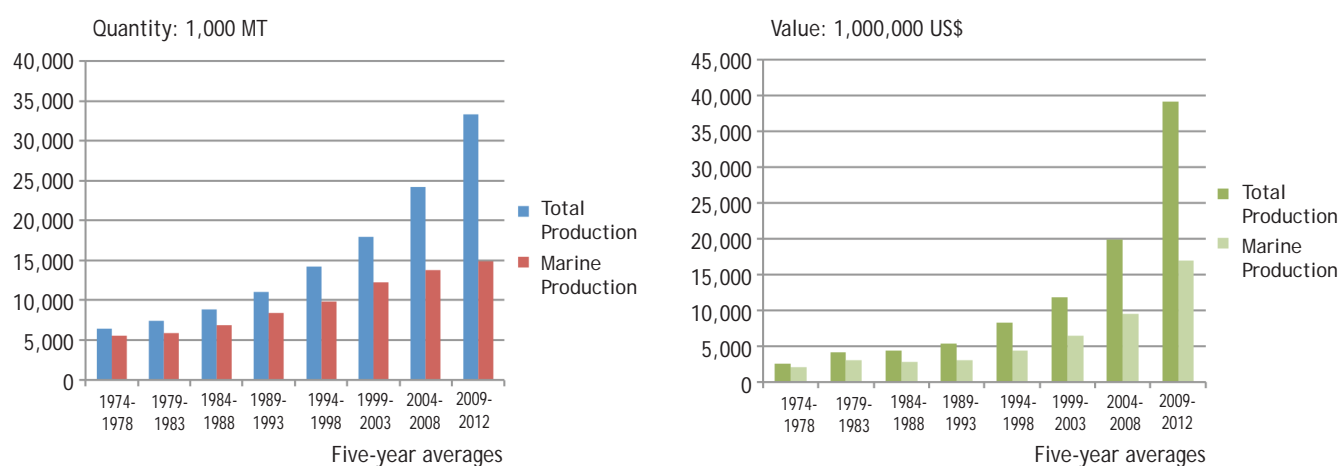


Fig. 1. Trend of fisheries production vs. marine capture fisheries production of Southeast Asia (based on 5-year averages from 1974-2012): (left) quantity in thousand MT, and (right) value of corresponding production in million US\$

sardines, anchovies, etc.; and miscellaneous fishes. In 2012 for example (**Table 3**), Indonesia's total production of these six major groupings accounted for 85% of the country's total production from marine capture fisheries, 29% of the region's total production from marine capture fisheries, and 12% of the region's total fisheries production. Indonesia's production of tunas was dominated by skipjack tuna (*Katsuwonus pelamis*) followed by yellowfin tuna (*Thunnus albacares*), kawakawa (*Euthynus affinis*), frigate tuna (*Auxis thazard*), and other tunas such as longtail, big-eye, bullet, albacore, and southern bluefin. Its production of tunas accounted for 21% of Indonesia's fish production from marine capture fisheries, 7% of the region's fish production from marine capture fisheries, and 3% of the region's total fishery production.

The Philippines had also sustained its production of tunas; jacks, mullets, sauries, etc.; mackerels; and red fishes, basses, congers, etc. from marine capture fisheries. Meanwhile, from the aforementioned six major groupings of marine aquatic species, the production by major producing Southeast Asian countries such as Malaysia, Myanmar, Thailand, and Viet Nam was reported as miscellaneous fishes (**Table 3**), which could not be classified by species.

Therefore, from Southeast Asia's total fish production from marine capture fisheries of 15,590,704 MT, more than 99% was contributed by these six major fish producing countries while less than 1% was contributed by the other three countries, *i.e.* Cambodia, Singapore, and Brunei Darussalam.

## Role of SEAFDEC in the Sustainable Development of Marine Capture Fisheries in Southeast Asia

As SEAFDEC continues to prosper in its fisheries R&D efforts during the 48 years of its existence, its mandate had been expanded to wit: “to develop and manage the fisheries potential of the region by rational utilization of the resources for providing food security and safety to the people and alleviating poverty through transfer of new technologies, research and information dissemination activities”. For almost four decades, the fisheries R&D activities of SEAFDEC had been greatly influenced and guided by five major episodes (**Box 1**), namely: the adoption in 1982 of the United Nations Convention on the Law of the Sea (UNCLOS); promotion of the FAO Code of Conduct for Responsible Fisheries (CCRF) starting in

Table 3. Production from marine capture fisheries of major fish producing countries of Southeast Asia in 2012 (by major species group, in MT)

Major species groupings	Indonesia	Malaysia	Myanmar	Philippines	Thailand	Viet Nam	TOTAL
Shads, milkfish, barramundi, etc.	104,102	22,202	-	3,239	61	-	129,604
Flounders, halibuts, soles, etc.	24,663	6,496	-	851	2,005	-	34,015
Red fishes, basses, congers, etc.	938,167	290,725	-	336,221	187,391	-	1,752,504
Jacks, mullets, sauries, etc.	897,994	230,523	-	487,336	144,155	-	1,760,008
Herrings, sardines, anchovies, etc.	544,480	34,431	-	462,637	218,625	-	1,260,173
Tunas	1,134,288	66,193	-	511,681	38,891	-	1,751,053
Mackerels	544,801	34,431	-	462,637	218,625	-	1,260,173
Sharks and rays	102,054	26,244	-	6,597	7,093	-	141,988
Miscellaneous fishes	505,226	355,332	2,332,790	14,377	470,096	1,818,900	5,496,721
Crabs	73,036	12,275	-	27,513	28,546	-	141,370
Lobsters	13,549	794	-	260	1,080	-	15,683
Shrimps, prawns, etc.	160,591	46,172	-	38,926	46,935	-	292,624
Miscellaneous crustaceans	1,177	-	-	-	-	-	1,177
Oysters	383	-	-	116	-	-	499
Mussels	3,353	-	-	26	11	-	3,390
Cockles, clams, etc.	45,618	4,588	-	707	16,505	-	67,418
Cuttlefish, squids, etc.	167,343	86,579	-	62,924	124,709	-	441,555
Mollusks	99,924	74,150	-	-	3,884	-	177,958
Invertebrates	40,228	11,980	-	951	118,063	-	171,222
Others	-	-	-	-	-	692,000	692,000
<b>TOTAL</b>	<b>5,400,977</b>	<b>1,472,239</b>	<b>2,332,790</b>	<b>2,145,233</b>	<b>1,612,073</b>	<b>2,510,900</b>	<b>15,474,212</b>

Source: SEAFDEC (2014)

Note: Total fishery production of the Southeast Asian countries from marine capture fisheries in 2012 was 15,590,704 MT

**Box 1. Important episodes that influenced the sustainable development and management of fisheries Southeast Asia, with focus in marine capture fisheries**

**1982 United Nations Convention on the Law of the Sea (UNCLOS)**

UNCLOS is a comprehensive international proclamation aimed to create a unified regime for governance of the rights of nations with respect to the peaceful uses of the seas and oceans. Specifically, UNCLOS promotes equitable and efficient utilization, and conservation of the seas' and oceans' natural resources, and protection and preservation of the marine environment. By defining the rights and responsibilities of nations with respect to their utilization of the seas and oceans, UNCLOS promotes guidelines for the management of marine natural resources.

After its establishment in 1967, SEAFDEC has been assisting the Southeast Asian countries in the development of their respective fisheries industries. Starting with the conduct of stock assessment of economically important marine species in the region; to the surveys of fishing grounds to assess fish stocks in exploited and un-exploited waters; and then improvements of the efficiency of traditional fishing gears and crafts, and introduction of new and responsible gears appropriate for the region, particularly small-scale models. The R&D efforts of SEAFDEC were aimed at assisting the Southeast Asian countries in improving their respective fisheries policies and management schemes in accordance with the provisions of the UNCLOS.

**1995 Code of Conduct for Responsible Fisheries (CCRF) and Regionalization by SEAFDEC of the CCRF**

While UNCLOS provided a new framework for better management of marine resources and provided coastal States the rights and responsibility to manage and utilize the fishery resources within their EEZs, which in totality comprises about 90% of the world's marine fishery resources, this was not sufficient to promote effective development and efficient management as many coastal States continued to be confronted with complicated challenges while utilizing these resources as the world fisheries became market-driven. Many coastal States took the new regime under UNCLOS as an opportunity to invest in modern fishing fleet and fish processing plants to respond to the rapidly growing demand for fish and fishery products. As a result, since the fishery resources could no longer sustain the uncontrolled exploitation of the resources, calls were made by the international community for the development of new approaches to fisheries management that would integrate conservation and environmental considerations with sustainable utilization. Closely related concerns also emerged, one of which was on the unregulated fishing in the high seas and another on uncontrolled fishing of straddling and highly-migratory fish species within and outside the EEZs. Therefore, the Committee of Fisheries (COFI) recommended in 1991 that a concept that would promote responsible and sustained fisheries should be developed, and in 1992, the International Conference on Responsible Fishing in Cancún, Mexico asked FAO to develop an international Code of Conduct to address such impeding concerns. The resulting Cancún Declaration was adopted during the 1992 United Nations Conference on Environment and Development (UNCED) as part of its Agenda 21. Consistent with the Cancún Declaration and decision of UNCED as well as those of other related conventions, the FAO Governing Bodies recommended the formulation of a global Code of Conduct for Responsible Fisheries (CCRF) which should be non-mandatory but based on the principles and standards applicable to conservation, management and development of all types of fisheries (FAO, 1995). Adopted in October 1995, the CCRF is meant to provide the necessary frameworks for national and international efforts to ensure sustainable utilization of aquatic living resources in harmony with the environment.

After the adoption of the global CCRF, SEAFDEC with funding support from the Japanese Trust Fund (JTF) initiated a program on the Regionalization of the Code of Conduct for Responsible Fisheries (RCCRF) starting in 1998 with the main objective of facilitating better understanding of the global CCRF by all stakeholders in the Southeast Asian region (Kato, 2003). The RCCRF considered the complex nature of the region's fisheries which is multi-species and multi-gear in nature, as well as the region's varying cultures and fisheries structures and the region's ecosystems. During the RCCRF, SEAFDEC came up with regional guidelines that accommodate the specific concerns of the region with respect to the global CCRF but which the CCRF had not highlighted, bridging the gaps between the international initiatives and the actual implementation of the CCRF at national and local levels in the region. This was intended to ensure the effective and efficient adoption of the global CCRF in the region (Ekmaharaj, 2007). Through the RCCRF as SEAFDEC's efforts in promoting the implementation of the global CCRF in the region, SEAFDEC became a recipient of the Margarita Lizárraga Medal Award given by FAO in 2007 for the biennium of 2006-2007.

To ensure that the regional guidelines would be implemented by the AMSs and fully understood by the region's stakeholders, SEAFDEC with financial support from the technical cooperation with the Swedish International Development and Cooperation Agency (Sida) under the Swedish Board of Fisheries, launched a four-year project on Human Resource Development for Fisheries Management in the ASEAN Region (2003-2006). Focusing on human resource development to support the implementation of the CCRF, particularly the Regional Guidelines for Responsible Fisheries in Southeast Asia: Responsible Fisheries Management (SEAFDEC, 2003), the project also facilitated the development of national frameworks on responsible fisheries by the respective AMSs (Wanchana, 2007).

The implementation of the regional guidelines by the AMSs was assessed during the Regional Seminar on the Implementation of the CCRF organized by SEAFDEC in October 2007, where the AMSs also agreed to mainstream the regional guidelines into their respective national policies under the framework of the CCRF. Nevertheless, taking into consideration their respective initiatives as well as laws and national priorities, SEAFDEC with assistance from collaborating partners responded to the request from the AMSs for continued support in furthering the implementation of the CCRF in their respective jurisdictions.

**1998 SEAFDEC Strategic Plan**

The 1998 SEAFDEC Strategic Plan which was crafted through a resolution during the SEAFDEC Special Consultative Meeting in December 1997 was adopted by the SEAFDEC Council in 1998. The development of the 1998 SEAFDEC Strategic Plan took into consideration the policies of the AMSs in planning their future fisheries directions and in ensuring the sustainable utilization of national and regional fishery resources. Thus, planning and implementation of programs and activities in the Southeast Asian region had been rationalized to respond to the changing paradigm in the region's fisheries management and requirements. The implementation of such programs and activities had been formalized when the ASEAN-SEAFDEC Fisheries Consultative Group (FCG) was established in 1998 to serve as a collaborative mechanism for the ASEAN and SEAFDEC to address regionally important issues and actions in sustainable fisheries development and management.

**Box 1. Important episodes that influenced the sustainable development and management of fisheries Southeast Asia, with focus in marine capture fisheries (Cont'd)**

**2001 Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region**

Amidst the backdrop of the 1998 SEAFDEC Strategic Plan, widespread regional concern on unsustainable fisheries practices in the Southeast Asian region continued to loom affecting the future supply of fish for food security as well as for the economic and social well-being of peoples in the AMSs (Vichitlekarn, 2003). While sustaining the collaboration between the ASEAN and SEAFDEC, and in order to address the aforementioned concern, the ASEAN and SEAFDEC with support from JTF organized the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium, “*Fish for the People*” also known as the Millennium Conference, in November 2001. The Millennium Conference adopted the Resolution on Sustainable Fisheries for Food Security for the ASEAN Region, as well as endorsed the corresponding Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region. These instruments provided the common fisheries policy framework and priority actions for the sustainable development and management of fisheries in the region. Based on the 2001 Resolution and Plan of Action, various collaborative projects and activities had been implemented in the AMSs addressing their respective priorities and requirements. Thus, the Special Five-Year Program on Sustainable Fisheries for Food Security in the ASEAN Region was developed to include projects relevant to marine fisheries, *i.e.* responsible fishing practices, coastal resource management, conservation and management of sea turtles, information collection for sustainable pelagic fisheries in Southeast Asia, among others. SEAFDEC spearheaded the development and implementation of such projects and activities in the AMSs with funding support from the JTF.

**2011 Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020**

The conduct of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2010 in June 2011 was conceived in order to sustain the momentum developed after ten years from the Millennium Conference in 2001 (Pongsri, 2009). As a sequel to the Millennium Conference, the 2011 Conference was aimed at addressing the concerns on current fisheries situation and emerging issues that impede the sustainable development and contribution of fisheries to food security in the region. The Conference adopted the 2011 Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 that serve as regional policy framework and guiding principles for the AMSs in achieving sustainable fisheries for food security during the coming decades while also responding to the changing fisheries environment. Guided by the aforementioned Resolution and Plan of Action, SEAFDEC through its collaborative mechanism with the ASEAN, has since then been implementing programs and activities in the AMSs that are relevant to the promotion of sustainable fish production as well as towards addressing emerging issues that hinder all efforts to achieve food security in the region. SEAFDEC also supports the AMSs in achieving the objectives of the ASEAN Community building, particularly in enhancing the contribution of fisheries to the region’s economic development, food security and poverty alleviation, taking particular attention on the emerging challenges and issues confronting the AMSs.

late 1990s and the corresponding effort of SEAFDEC to regionalize the CCRF from 1998 to early 2000s; adoption of the SEAFDEC Strategic Plan in 1998; adoption in 2001 of the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region; and the subsequent adoption in 2011 of the updated Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020. These regional pronouncements have served as frameworks for the development and implementation of programs and activities by SEAFDEC in the Southeast Asian region taking into consideration the priorities and requirements of the SEAFDEC Member Countries.

In order to facilitate the conduct of such programs and activities in the Southeast Asian region, SEAFDEC strengthened its linkage with the ASEAN under the ASEAN-SEAFDEC Fisheries Consultative Group (FCG) collaborative mechanism which was established in 1998, and the signing of the Letter of Understanding in 2007 for the ASEAN-SEAFDEC Strategic Partnership (ASSP). The impacts of SEAFDEC’s efforts in promoting these pronouncements in the ASEAN Member States (AMSs) that led to sustainable production of fish from marine capture fisheries could be gleaned in **Fig. 2**. Moreover, while becoming more concerned on the sustainability of global fisheries, the international community came up with various international and regional declarations

and instruments (**Box 2**) that require compliance by the AMSs, especially the exporting countries, with SEAFDEC providing technical assistance to the AMSs.

Furthermore, to enable the AMSs to adhere to international and regional instruments on sustainable fisheries development and management, especially with respect to small-scale marine fisheries, the assistance of SEAFDEC was sought. In responding to the requirements of the AMSs, SEAFDEC re-adjusted its projects and activities. The specific role of SEAFDEC in empowering the AMSs to comply with the requirements fundamental in such conventions and instruments are shown in (**Box 2**).

## Way Forward

Through its Training Department (TD), the efforts of SEAFDEC to facilitate the management and sustainable utilization of fishery resources in the Southeast Asian region would be continued. Specifically, R&D will be carried out on sustainable capture fisheries, optimum utilization of fishery resources, resource enhancement, fishing community resilience, and on emerging issues, *e.g.* optimizing energy use in capture fisheries, addressing issues on sustainable fisheries and IUU fishing. In addition, TD would also continue to conduct training courses in various aspects of sustainable capture fisheries, optimum utilization of fishery resources, resource enhancement,



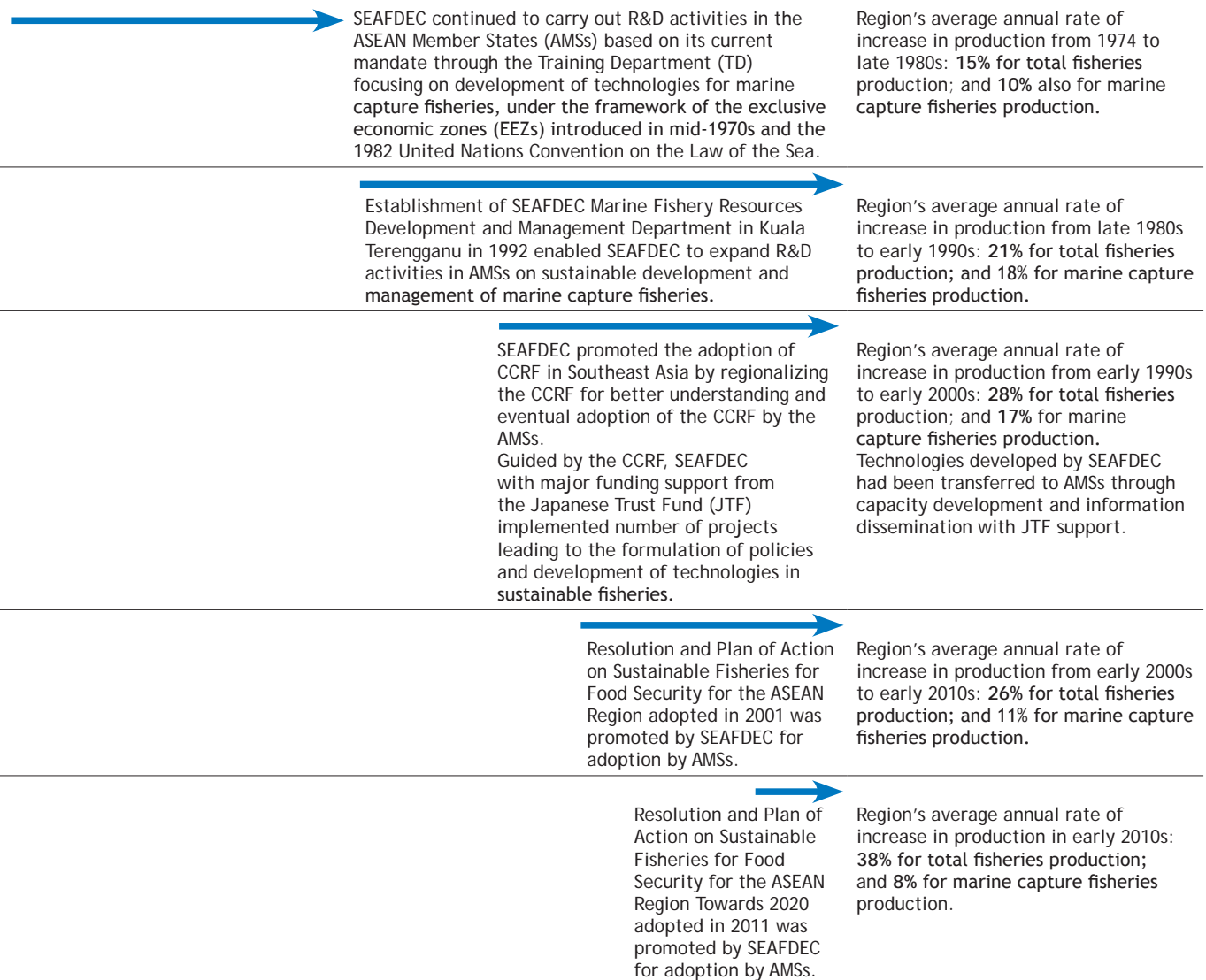
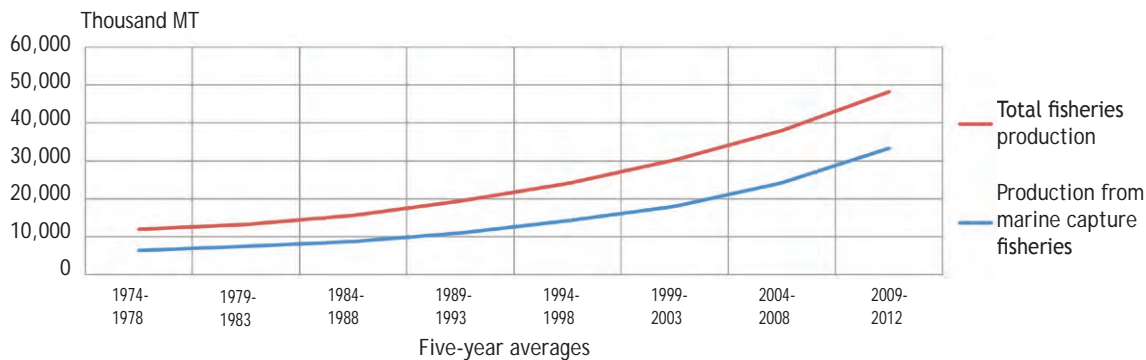


Fig. 2. Trend of fisheries production in Southeast Asia from 1974 to 2012, and corresponding efforts of SEAFDEC to assist the ASEAN Member States in attaining sustainability in fisheries through the promotion of responsible fishing technologies and improved fisheries management

coastal and small-scale fishery management and emerging issues and concerns in order that available fishery resources in the region are effectively and rationally utilized.

SEAFDEC/MFRDMD would also implement research, training and information activities that aim to promote

sustainable development and management of marine fishery resources in Southeast Asia, where its focus would be on the conduct of R&D on the status of marine fishery resources and their exploitation, and stock assessment of important marine fish species. MFRDMD would also provide regional fora for consultation and cooperation in research,

## Box 2. Major international and regional instruments that call for compliance and development of common position by the ASEAN Member States

**Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**, which entered into force in July 1975 aims to ensure that international trade in wild animal and plants does not threaten the survival of the species. Countries that are parties to the Convention have the responsibility to protect endangered species and international cooperation is enhanced to protect certain species from over-exploitation through international trade. Species protected under CITES are listed in three Appendices, the listing of which is determined after detailed experts evaluation and scientific justifications.

As of 1996, all species of sea turtles have been classified as endangered by the International Union for Conservation of Nature (IUCN) Red List of Threatened Animals, and the global concern on these species being endangered have been increasing, due to indiscriminate exploitation of the species by humans for commercial gains. In order to address such concern, SEAFDEC/MFRDMD collaborated with the AMSs to promote the conservation and management of sea turtles in Southeast Asia. With funding support from JTF, the program on Conservation and Management of Sea Turtles in Southeast Asia was launched in 1998 with the objectives of compiling information on sea turtle stocks, and on the conservation and management activities undertaken by the countries, as well as establishing mechanisms for regional collaboration in research and conservation of sea turtles. Since then, various projects and activities had been carried out in the region including sea turtle hatchery management, tagging survey and satellite telemetry, development of sea turtle excluder devices (with SEAFDEC/TD), population and DNA studies, sea turtles-fisheries interaction, head starting technique, and sea turtle information dissemination, among others (Mahyam Mod Isa *et al.*, 2008; Chokesanguan, 2008).

As early as 2002, some species of sharks and rays have been proposed for listing in the CITES Appendices to regulate their trade. Considering that fisheries of elasmobranchs including some species of sharks and rays are economically important in the Southeast Asian region, such proposal could affect the fisheries industry of the region. In response to such proposal, SEAFDEC convened a number of regional meetings where the AMSs asked SEAFDEC to carry out a project on Data and Information Collection on Status and Trends of Shark Fisheries and Utilization, and for SEAFDEC to assist the concerned AMSs to develop their respective National Plans of Action on Sharks (NPOA-Sharks) in line with the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) to be supported by scientific evidence.

Thus, SEAFDEC with financial assistance from JTF has been undertaking a review of the region's information on sharks and rays as well as conservation measures to obtain scientific evidence on the status of the stocks of sharks and rays in the region (Chamsai *et al.*, 2013). In addition, SEAFDEC has sought the assistance of the European Union (EU) for the conduct of capacity building activities with respect to the proposed listing of economically important marine species in the CITES Appendices for the benefit of the AMSs, which at the onset could include shark-related issues particularly taxonomy, DNA of shark fins, species identification, non-detriment findings (NDFs) in CITES, and updating of information on marketing of sharks and shark products in the region.

Moreover, SEAFDEC through its Aquaculture Department in the Philippines has also taken steps to conduct activities related to stock enhancement of threatened species of international concern, *e.g.* sea horses, giant clams, abalone, sea cucumbers, Napoleon wrasse. The details of which would be discussed in succeeding issues of *Fish for the People*.

**United Nations Framework Convention on Climate Change (UNFCCC)**, which was launched during the Earth Summit in Rio de Janeiro in June 1992 but entered into force in March 1994, mainly aims to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Although considered legally non-binding, UNFCCC provides a framework for negotiating specific international treaties (also known as protocols) that may set binding limits on greenhouse gases. For example, in 1997, the Kyoto Protocol was concluded and established legally binding obligations for developed countries to reduce their greenhouse gas emissions. The 2010 Cancun Agreements stated that future global warming should be limited to below 2.0°C (3.6°F) relative to the pre-industrial level. One of the tasks set by the UNFCCC was for signatory nations to establish national greenhouse gas inventories of greenhouse gas (GHG) emissions and removals, which were used to create the 1990 benchmark levels for accession of countries to the Kyoto Protocol and for the commitment of those countries to GHG reductions. The UNFCCC designated the United Nations Secretariat to support the operation of the Convention through the Intergovernmental Panel on Climate Change (IPCC), especially in getting consensus through meetings and the discussion of various strategies. In the subsequent Bali Action Plan adopted in 2007, all developed country Parties have agreed to “some quantified emission limitations and reduction objectives, while ensuring the comparability of efforts, taking into account differences in their national circumstances”. Developing country Parties agreed to “the nationally appropriate mitigation actions [NAMAs] in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner”. However, some developing country Parties have expressed the need for international support in their plans. The ultimate objective of the UNFCCC is to prevent “dangerous” anthropogenic (*i.e.*, human-caused) interference of the climate system, and requires that GHG concentrations are stabilized in the atmosphere at a level where ecosystems can adapt naturally to climate change, food production is not threatened, and economic development can proceed in a sustainable fashion. Since global warming that has already occurred poses a risk to some human and natural systems (*e.g.*, coral reefs), generally increasing the risk of negative impacts, it could lead to widespread loss of biodiversity and reduced global and regional food security.

In an effort to assist the AMSs in coping with the impacts of climate change that have affected their respective fisheries industries, SEAFDEC with financial support from Sweden is implementing a project on Improving Fisheries and Habitat Management, Climate Change Adaptation and Social Well-being in Southeast Asia. Comprising Phase II of the SEAFDEC-Sweden partnership (Phase I was known as the SEAFDEC-Sida Project), this five-year (2013-2017) Project aims to continue highlighting and addressing issues related to climate change and adaptive measures of fisheries stakeholders in one component, taking into consideration the lessons learned from Phase I which indicated that improved resources and environmental management could lead to building up the capability of communities' resilience and enhance their adaptive capacity to the impacts of climate change (Sam Ath *et al.*, 2013).

Moreover, while recognizing that the fishery sector has been known as one of the sources of GHG emissions, SEAFDEC through its Training Department had been promoting the adoption of energy saving technologies and practices that reduce reliance on fossil fuel and eventually achieve improved national financial economies by coming up with management direction for energy use in fisheries (Chokesanguan, 2011). In order to reduce dependence on fossil fuel, it has become necessary to compile information on energy use and practices in the fishery sector, craft policy framework for managing energy use, as well as conduct of R&D on low impact fuel efficient (LIFE) capture fisheries technologies. LIFE fishing is a cost-effective technology that aims to modify or replace high-impact and fuel-hungry fishing techniques and practices by using gears that can create low impact on the environment and consume less fuel thereby, decreasing impacts to aquatic ecosystems, reduce GHG emission, and lower fuel costs (Chokesanguan and Suuronen, 2014).



## Box 2. Major international and regional instruments that call for compliance and development of common position by the ASEAN Member States (Cont'd)

**International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)**, which was developed within the framework of the CCRF, is a voluntary instrument mainly aimed at preventing, deterring and eliminating IUU fishing that undermines all efforts to conserve and manage fish stocks in capture fisheries. IPOA-IUU provides all States with comprehensive, effective and transparent measures to address issues on IUU fishing and prevent the possible collapse of marine capture fisheries.

**EC Regulation No. 1005/2008 to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing (EC Regulation)** is a non-discriminatory instrument applied to all fishing vessels under any flag which seeks to prevent, deter and eliminate IUU fishing in all maritime waters. The EC Regulation also aims to regulate the importation of fish and fishery products to the EU by ensuring full traceability of all marine fishery products traded to the EU through a catch certification scheme.

**Regional Plan of Action (RPOA) to Promote Responsible Fishing Practices including Combating IUU Fishing in the Region**, which is a voluntary instrument, aims to enhance and strengthen fisheries management so that the fishery resources and the marine environment are sustained and the benefits of adopting responsible fishing practices could be optimized. Covering the areas in the South China Sea, Sulu-Sulawesi (Celebes) Seas and Arafura-Timor Seas, the RPOA takes its core principles from existing international instruments, especially from the IPOA-IUU. With its Secretariat based in Indonesia, the RPOA is a collaborative arrangement among 11 countries, namely: Indonesia, Australia, Brunei Darussalam, Cambodia, Malaysia, Papua New Guinea, Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam.

As early as 2008, the SEAFDEC Council of Directors provided directives for SEAFDEC to provide technical support and advise as well as assist the AMSs in the implementation of the RPOA, particularly in supporting responsible fishing practices in the region and increasing the awareness of the AMSs in related laws and regulations to enhance compliance with the RPOA (Siriraksophon *et al.*, 2009). Thus, SEAFDEC has been conducting various fora to support the efforts of the AMSs in combating IUU fishing in their respective EEZs. Moreover, SEAFDEC through the SEAFDEC-Sweden collaborative arrangement also facilitated the development of the concept of sub-regional area management to enhance the promotion of sub-regional fisheries management arrangements. Such effort is meant to support the development and implementation of national plans of action (NPOAs) to combat illegal fishing in concerned countries (Torell *et al.*, 2010).

Meanwhile, with continued support from JTF, SEAFDEC has been assisting the AMSs in their efforts to combat IUU fishing through the implementation of activities that include promotion of fishing licenses, boats registration and port state measures as means of combating IUU fishing in the region. In addition, SEAFDEC also provides assistance to AMSs in the application and implementation of IUU fishing-related countermeasures that include the promotion of MCS management for sustainable fisheries in the region (Matsumoto *et al.*, 2012).

In accordance with relevant provisions in the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, SEAFDEC has been implementing various activities that aim to control IUU fishing in the waters of Southeast Asia. These include activities that aim to prevent the export of IUU fishing products from the Southeast Asian region (Latun *et al.*, 2013) and enhance the sustainable development of fisheries in the region, facilitating the promotion of countermeasures that had been developed by SEAFDEC for combating IUU fishing in Southeast Asia (Kawamura and Siriraksophon, 2014). Such countermeasures include the compilation of Regional Fishing Vessels Record (RFVR) for fishing vessels 24 meters in length and over spearheaded by SEAFDEC/TD, the development of ASEAN Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing into the Supply Chain by SEAFDEC/MFRDMD, development of the ASEAN Catch Documentation Scheme (ACDS) which is still ongoing, and the development of the RPOA-Fishing Capacity which is also in the offing. While the ACDS is being developed taking into consideration the EC Regulation 1005/2008 to facilitate the export of fish and fishery products to the EU by the AMSs, it would focus mainly on inter- and intra-regional trade of fish and fishery products from marine capture fisheries.

Furthermore, SEAFDEC in collaboration with the AMSs had initiated the development of the Regional Plan of Action on Sustainable Utilization of Neritic Tuna Resources in the ASEAN Region to ensure sustainable fisheries management to neritic tuna resources in the region. Plans for the conservation and management of eel resources had also been initiated to ensure the sustainable utilization of eel resources in Southeast Asia (Kawamura and Siriraksophon, 2014).

conservation and management of marine fishery resources, in addition to training programs on stock assessment, fisheries management and conservation of endangered, threatened and protected aquatic species.

SEAFDEC would therefore continue to enhance its technical capability in marine capture fisheries to address the needs, requirements and priorities of the AMSs, aiming for sustainability in marine fisheries. In so doing, SEAFDEC would also enhance its cooperation and collaboration with donors and other organizations working towards sustainable development of fisheries in the region to ensure that all efforts dovetail to the improvement of the contribution of fisheries to food security and poverty

alleviation in the region amidst the backdrop of the ASEAN Economic Community integration by the end of 2015.

## References

- Chamsai, Sawitree, Somboon Siriraksophon, Worawit Wanchana, Hotmuida Purba, Imelda Riti Anak Rantty, Neil Kenneth P. Catibog, and Tran Van Hao. 2013. Improving Data Collection on Sharks in Southeast Asia: Regional Approach to Address CITES-related Concerns. *In*: Fish for the People: Volume 11 No. 3 (2013). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 10-15
- Chokesanguan, Bundit. 2008. Mitigating Interactions and Reducing Mortality of Sea Turtles Due to Fishing: SEAFDEC Initiatives. *In*: Fish for the People: Volume

- 6 No. 2 (2008). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 12-14
- Chokesanguan, Bundit. 2011. Optimizing Energy Use in Fisheries in Southeast Asia. *In: Fish for the People: Volume 9 No. 2* (2011). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 21-27
- Chokesanguan, Bundit and Petri Suuronen. 2014. Advances in Fishing Technology: Mitigating the Impacts of Fishing Operations on Coastal and Marine Environments. *In: Fish for the People: Volume 12 No. 1* (2014). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 2-10
- Ekmaharaj, Siri. 2007. Building a Strong Base to Support Sustainable Fisheries in Southeast Asia. *In: Fish for the People: Volume 5 No. 3* (2007). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 2-4
- FAO. 1995. Code of Conduct for Responsible Fisheries. FAO, Rome, Italy
- FAO. 2014. The State of World Fisheries and Aquaculture: Opportunities and Challenges. Food and Aquaculture Organization of the United Nations, Rome, Italy, 2014; 221 p
- Kato, Yasuhisa. 2003. Globalization vs. National Implementation: The Role of Regionalization. *In: Fish for the People: Volume 1 No. 1* (2003). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 13-16
- Kawamura, Hajime and Somboon Siriraksophon. 2014. Sustained Promotion of Responsible Fisheries to Secure Competitiveness of ASEAN Fish and Fishery Products in Intra- and Inter-regional Trade: SEAFDEC Initiative. *In: Fish for the People: Volume 12 No. 3* (2014). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 9-14
- Latun, Abdul Razak, Abu Talib bin Ahmad, Mazalina Ali, Masaya Katoh, and Virgilia Sulit. 2013. Developing Market Measures to Control IUU Fishing in Southeast Asia. *In: Fish for the People: Volume 11 No. 1* (2013). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 19-250
- Mahyam bte Mohd Isa, Syed Abdullah bin Syed Abdul Kadir and Wahibah bte Mohd Arshaad. 2008. Following-up on the Conservation of Sea Turtles in Southeast Asia: DNA Study. *In: Fish for the People: Volume 6 No. 2* (2008). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 6-11
- Matsumoto, Kenji, Bundit Chokesanguan, Virgilia Sulit, and Kongpathai Saraphaivanich. 2012. Development of Regional Fishing Vessels Record as Tool to Combat IUU Fishing in Southeast Asia. *In: Fish for the People: Volume 10 No. 3* (2012). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 12-16
- Pongsri, Chumnarn. 2009. Sustainable Fisheries Development through Cooperative Strategies for Long-term Food Security: The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020. *In: Fish for the People: Volume 7 No. 3* (2009). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 9
- Sam Ath, Leng, Hotmaida Purba, Vankham Keophimphone, Imelda Riti Anak Rantty, Aung Toe, Ronaldo R. Libunao, Sarayoot Boonkumjad and Tran Van Hao. 2013. Improving Fisheries and Habitat Management, Climate Change Adaptation and Social Well-being in Southeast Asia: the SEAFDEC-Sida Project in Focus. *In: Fish for the People: Volume 11 No. 2* (2013). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 16-23
- SEAFDEC. 1980. Fishery Statistical Bulletin for the South China Sea Area 1978. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 200 p
- SEAFDEC. 1984. Fishery Statistical Bulletin for the South China Sea Area 1982. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 268 p
- SEAFDEC. 1987. Fishery Statistical Bulletin for the South China Sea Area 1985. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 178 p
- SEAFDEC. 1992. Fishery Statistical Bulletin for the South China Sea Area 1989. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 169 p
- SEAFDEC. 1994. Fishery Statistical Bulletin for the South China Sea Area 1992. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 159 p
- SEAFDEC. 1997. Fishery Statistical Bulletin for the South China Sea Area 1994. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 159 p
- SEAFDEC. 2002. Fishery Statistical Bulletin for the South China Sea Area 1998. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 142 p
- SEAFDEC. 2003. Regional Guidelines for Responsible Fisheries in Southeast Asia: Responsible Fisheries Management. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 69 p
- SEAFDEC. 2006. Fishery Statistical Bulletin for the South China Sea Area 2002-2003. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 173 p
- SEAFDEC. 2010. Fishery Statistical Bulletin of Southeast Asia 2008. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 135 p
- SEAFDEC. 2012. The Southeast Asian State of Fisheries and Aquaculture 2012. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 130 p
- SEAFDEC. 2014. Fishery Statistical Bulletin of Southeast Asia 2012. Southeast Asian Fisheries Development Center, Bangkok, Thailand; 135 p



- Siriraksophon, Somboon, Pirochana Saikliang and Virgilia Sulit. 2009. Ensuring Sustainable Fisheries Management: The Regional Advisory Committee for Fisheries Management in Southeast Asia. *In*: Fish for the People: Volume 7 No. 2 (2009). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 9-14
- Torell, Magnus, Siri Ekmaharaj, Somboon Siriraksophon, and Worawit Wanchana. 2010. Strategies to Combat Illegal Fishing and Manage Fishing Capacity: Southeast Asian Perspective. *In*: Fish for the People: Volume 8 No. 1 (2010). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp10-19
- Vichitlekarn, Suriyan. 2003. 1<sup>st</sup> Anniversary of the ASEAN-SEAFDEC Conference “Fish for the People”. *In*: Fish for the People: Volume 1 No. 1 (2003). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 2-12
- Wanchana, Worawit. 2007. Beyond Regionalizing the Code of Conduct for Responsible Fisheries: ASEAN-SEAFDEC Human Resource Development Initiative. *In*: Fish for the People: Volume 5 No. 3 (2007). Southeast Asian Fisheries Development Center, Bangkok, Thailand; pp 5-9

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