

Promoting Sustainable Tuna Fisheries Management in Southeast Asian Waters through Regional Cooperation

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The global demand for tunas has been dramatically growing in recent years reflecting a shift of consumers' preference to food fish as protein source. The world tuna markets have substantially expanded and diversified into tuna sashimi and canned tuna. During the last several decades, Japan had been almost the only market for sashimi tuna, but nowadays, people in many countries of the world also prefer to eat tuna sashimi. The status of tuna stocks of the world depend on the regions/areas as well as on the species. Although some species are reported to be over-exploited, production of other species is continuously stable as a result of conservation and management efforts by Tuna Regional Fisheries Management Organizations (tuna RFMOs). Tunas are commercially-important fishery resources in the Southeast Asian region, providing products for export as well as for domestic consumption. As reported, the total tuna production from Southeast Asian waters increased from 0.87 million mt in 2001 to 1.94 million mt in 2008, including five oceanic tuna species, namely: bigeye, yellowfin, skipjack, albacore, and bluefin tuna, as well as from four neritic species, such as bullet tuna, frigate tuna, eastern little tuna, and longtail tuna.

Statistics have shown that in the Western Central Pacific Area (WCPA), the trend of skipjack tuna production had been increasing from 200,000 metric tons (mt) in 1970 to 1,300,000 mt in 2005, while stocks of bluefin tuna in the southern oceans decreased from 65,000 mt in 1970 to only 15,000 mt in 2005 (FAO, 2006). It has always been suggested that from the regional perspective, tuna fisheries in the Southeast Asian waters as a sub-regional area, should be placed under the guidance and management of tuna RFMOs such as the Western Central Pacific Fisheries Commission (WCPFC) and Indian Ocean Tuna Commission (IOTC). However, since the stock structure of tunas distributed in the Southeast Asian region is presently obscure and vague, it would be difficult to develop appropriate tuna management at the national and sub-regional levels, hampering the efforts of concerned RFMOs in carrying out effective regional stock assessment.

Confronted with a similar scenario, SEAFDEC with funding support from the Government of Japan Trust Fund carried out the project on "Information Collection of Highly Migratory Species in the Southeast Asian Waters" from 2008 to 2011, to examine the trend of tuna exploitation in the Southeast Asian waters. With specific objectives of clarifying and assessing the status of tuna exploitation

in the Southeast Asian waters through various methods of information gathering, the project was conducted in collaboration with major tuna producing countries in the region, namely: Indonesia, Philippines, Thailand, Vietnam, and Malaysia. Analysis of the tuna exploitation focused on oceanic and neritic tunas that are exploited in the EEZs of the Southeast Asian countries. The data and information used for the analysis were sourced from national fishery statistics data, data samplings at selected landing sites, and results of consultations with national tuna focal points. Origin and species composition of tunas were examined and analyzed to warrant the status of tuna exploitation in specific sea areas, such as in the South China Sea, Sulu Sea, Celebes Sea, Andaman, Sea, Eastern Indian Ocean, Western Pacific Ocean, Banda Sea, and Gulf of Thailand. Nevertheless, since oceanic tunas are highly migratory while most of the neritic tuna stocks are shared among the Southeast Asian countries, therefore, management of tunas under the jurisdiction of a single country would not be sufficient.

In an effort to address such concern, the SEAFDEC Council at its 44th Meeting in April 2012 and the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) at its 15th Meeting in November 2012, requested SEAFDEC to develop a concept for regional cooperation to promote the sustainable management of tuna fisheries in the Southeast Asian region. However, before proceeding with the establishment of such Regional Cooperation, it is important that the countries should develop their respective policies that would support any concerted effort for the sustainable exploitation of the oceanic and neritic tuna resources in the sub-regional and/or regional areas of the Southeast Asian waters. Moreover,



Unloading and recording of tuna catch at the Tuna Fishing Port in General Santos City, Philippines

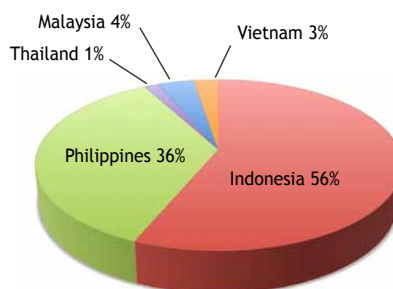
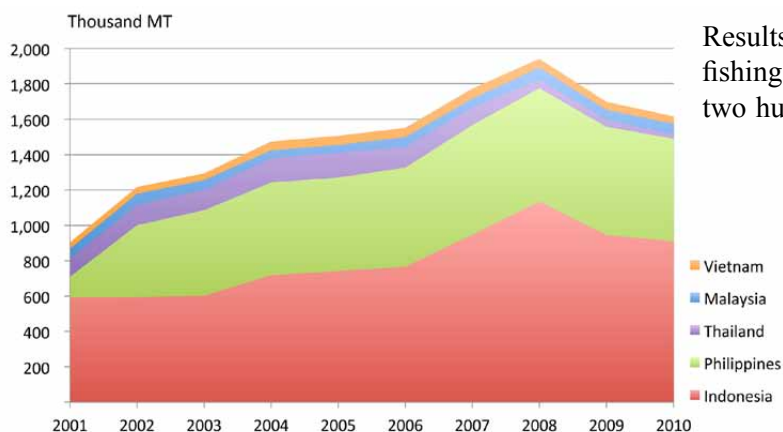
the development of such Regional Cooperation would also take into consideration relevant provisions in the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 which were adopted in 2011, while the 2009 SEAFDEC Program Framework would be used as guide for the ASEAN-SEAFDEC countries in the promotion of sustainable tuna fisheries in the Southeast Asian waters. The outcomes of the Regional Cooperation would be beneficial not only to the countries in the region but also to relevant tuna RFMOs.

Status of Tuna Exploitation in Waters of Southeast Asia

The trend of tuna exploitation in the Southeast Asian countries has been well documented, especially in Indonesia and the Philippines, although this is not well organized in other countries such as Thailand, Vietnam, Malaysia, Myanmar, Brunei Darussalam, and Cambodia. As shown in the fishery statistical data, the total tuna production from Southeast Asian waters was about 1.94 million mt in 2008 increasing from 0.87 million mt in 2001 (**Fig. 1**). During its peak in 2008, the total marine capture production in the region was 13.8 million mt (SEAFDEC, 2010), and tuna represented about 14% of the total production from marine capture fisheries of the region. Comparing the catch among the Southeast Asian countries in 2010, about 56% and 36% of the total tuna production from the region were provided by Indonesia and Philippines, respectively. Subsequently, it can be gleaned that Indonesia was the biggest supplier of fresh and frozen tuna to the U.S.A. contributing about 36% (or about 9,000 mt) of the total U.S. fresh and frozen tuna imports in 2007 (Globefish, 2008), followed by the Philippines at 23%. As the number one supplier of principally yellowfin and bigeye tunas to sashimi markets in Japan, Indonesia air-ships about 15,000 mt of sashimi-grade tuna per year (Infofish, 2007). Nevertheless, the total tuna production from the region had slightly declined from 1.94 million mt in 2008 to 1.60 million mt in 2010

due to the declining trend of tuna exploitation especially by Indonesia and the Philippines while those of the other countries such as Malaysia and Vietnam also indicated certain fluctuations. However, the total tuna catch landing in Vietnam is estimated only for oceanic tuna but not including neritic tuna due to insufficient statistical data by species.

The composition of tuna stocks in the Southeast Asian waters depend on the sea areas and sub-regional areas (SEAFDEC, 2012). However, an overview of the tuna resources in the region indicated that skipjack is a dominant species representing 36% of all tuna exploitations followed by frigate tuna, yellowfin, eastern little tuna, and longtail tuna representing 18%, 17%, 14% and 9%, respectively. The other tuna species such as bigeye, bullet tuna, albacore, and southern bluefin tuna account for less than 7% of the total exploitation. Although tuna fisheries in the region could be grouped according to species, the catch composition could also be classified from the type of main fishing gears used for both oceanic and neritic tunas such as purse seine (including ringnets) associated with fish aggregating devices (FADs) called *payao* in the Philippines or *rumpons* in Indonesia, long-line, vertical hand-line, and gillnet. In the Philippines, the major catch from purse seine and ringnets is composed of skipjack tuna, roundscads, yellowfin tuna and frigate tuna. Other catches include small volumes of bigeye tuna, eastern little tuna and big-eye scad. For tuna hand-line, majority of the catch comprises adult yellowfin tuna, blue marlin and swordfish. Adult bigeye and yellowfin are also popularly caught in nearby FADs by vertical hand-line, a method which has been recently applied in Sabah State of Malaysia. This led to increased total landings of oceanic tuna especially yellowfin and bigeye in Sabah State. The yellowfin, bigeye, albacore, and southern bluefin tuna taken from the Western Pacific within the EEZs of the Philippines and Indonesia and in some sea areas such as Banda Sea and South China Sea, are also caught by long-lines. Pole-and-line fishery for skipjack is also being operated in the Sulawesi Sea by the Indonesian fishers.



Results based on this study indicated that important tuna fishing grounds which could provide yields higher than two hundred thousand metric tons are in Maluku-Papua,

Fig. 1. Total exploitation of tunas in 2001-2010 in the Southeast Asian waters (left) and percentage of catch by country in 2010 (right)

North Sulawesi, Mindanao Sea, and Sulu Sea as shown in **Fig. 2**. As the figure clearly shows, tuna resources are very important and shared by two or three countries especially in the Sulu-Sulawesi sub-regional area (Sulu Sea and Celebes Sea). Meanwhile, the South China Sea and Andaman Sea are also other areas where tuna resources are shared. The said study also indicated that aside from oceanic tunas (*i.e.* bigeye and yellowfin tunas), neritic tunas (*i.e.* frigate tuna, longtail tuna and eastern little tuna) are also abundant and important resources in the aforementioned sub-regional sea areas.

Regional Assessment of Tuna Stocks

In principle, tuna resources in the Southeast Asian region are managed under the framework of relevant tuna RFMOs such as the WCPFC and IOTC, which also support the regular conduct of tuna stock assessment in the WCPA and the Indian Ocean, respectively. However, stock assessment conducted by these tuna RFMOs focuses mainly on oceanic tuna species such as skipjack, yellowfin, bigeye, albacore, and bluefin tunas based on an assessment model that requires time series data inputs and other relevant parameters/data. Taking into account the geographic feature of the Southeast Asian region as part of WCPA, any stock assessment that mainly uses time series data from developed countries' fishing activities in the high seas and in some EEZs of the Pacific Island countries may not reflect the real status of the tuna stocks in the waters of Southeast Asia. This is because of the complex data at the sub-regional areas such as those in the South China Sea, Sulu Sea, Celebes Sea, and Banda Sea. Furthermore, the tuna stock assessments conducted by such tuna RFMOs do not cover the neritic tuna species.

Many Southeast Asian countries have attempted to assess the tuna stocks in their respective EEZs and national waters with support from regional/international organizations such as SEAFDEC, FAO, RFMOs, among others. However, Chee (1995) pointed out that the inadequate information in most countries on the distribution and migration of the several tuna species as well as on stock structure even though biological information may be collected independently by many countries, does not merit proper assessment of the tuna stocks. Many countries in the region are known to have also conducted several workshops with the objective of assessing the stocks of tuna, for example the workshop in Indonesia (SFP, 2009) which aimed to determine the stocks of tunas in its waters. The workshop indicated that insufficient and inaccurate statistical data (that meet the data requirements for scientific stock assessments) still prevail up to now, therefore satisfactory results of scientific stock assessments relating to tunas are not available in many countries of the region. Nonetheless, tuna experts



Fig. 2. Relative abundance of tuna resources in different sub-regional areas of the Southeast Asian region (2009)

at the workshop agreed that although reasonable stock size of Indonesian tunas could not be estimated to date, indicators should be established to predict the condition of Indonesian tuna fisheries, instead of coming up with the actual estimation of the tuna stock size *per se*.

Requirements for Tuna Fisheries Policy and Management

Exploitation of tuna at particular time, age, and size by one country will definitely affect the catch of other neighboring countries since tunas are migratory stocks. In order to address this concern, a concerted effort of all parties involved in tuna fisheries in the Southeast Asian region is deemed necessary. Specifically, a coordinated regional approach is necessary in order to gather the appropriate data and carry out analyses and interpretations that could lead to effective management. The important geographic features and large marine ecosystems in the region include spawning grounds of important tuna species as could be gleaned from the total tuna production of the Southeast Asian region and in the RFMO areas.

In this connection, development of sustainable management for tuna fisheries in the Southeast Asian waters should be considered at national and regional levels although this should not be isolated from that of the RFMOs, in fact, such regional management schemes should be complementary. However, since relevant data are still not sufficient for effective tuna stock assessment at national, sub-regional and regional levels, therefore a regional working group should be established to focus on the stock assessment of each tuna species. Results of the stock assessment would be used to support the development of fisheries policies and effective management for sustainable tuna fisheries in the Southeast Asian region.

Box 1. Key issues to be addressed under the proposed regional cooperation for sustainable tuna fisheries management in the Southeast Asian waters

Stock Assessment at National and Sub-regional Areas

- Establishment of working group(s) on tuna stock assessment
- Improvement of national data collection systems
 - Support routine biological and resources surveys
 - Separate high seas production from domestic tuna production
- Promote collaborative/joint research surveys in the EEZs and sub-regional areas

Impacts on Environment, Biodiversity and Tuna Stock

- Fishing Gear Selectivity
 - Reduction of the by-catch of endangered aquatic species such as marine turtles, dolphin, sharks and rays, from long-line fisheries
 - Reduction of juvenile tuna by-catch (e.g. yellowfin and bigeye tunas) in purse seine fishing
- Fish Aggregating Devices (fixed or drifting)
 - Proper management of FADs through control and monitoring
- R&D on the use the appropriate FADs in terms of low impact to environment
- Establishment of the fish *refugia* to protect spawning and nursery grounds
- Establishment of closed season for the conservation and management of tuna resources

Effective Fisheries Management

- Fishing Fleet Management: consider maintaining or reducing fishing capacity to strike a balance of existing tuna stocks
- Tuna fisheries management within the EEZs and sub-regional areas: consider appropriate input-output control practices

IUU Fishing

- Develop and promote an appropriate regional catch documentation schemes or RFMOs catch documentation schemes
- Strengthen MCS through sub-regional cooperation to prevent the IUU fishing practices by foreign vessels

Socio-economics

- Enhance intra-regional trade of tuna raw materials and tuna products in the region
- Promote appropriate fish-handling technology and practices at sea
- Support the proposed eco-labeling of tuna fishery products within the ASEAN

Human Resources/Capacity Building

- Identification of tuna species particularly juveniles of yellowfin and bigeye tunas
- Life history of tunas focusing on the larval stages
- Improvement of data collection systems including database at national and regional levels
- Stock assessment using appropriate assessment model(s)

Regional Cooperation to Promote Sustainable Tuna Fisheries

Thus, for the promotion of sustainable tuna fisheries in the Southeast Asian region, a regional cooperation is necessary to support tuna fisheries management in the future. In this regard, the SEAFDEC Council during its 45th Meeting in April 2013 considered the proposed development of fisheries policy framework to support tuna management at national and sub-regional areas where transboundary issues exist specifically in Sulu Sea, Celebes Sea, South China Sea, and Andaman Sea. While encouraging relevant tuna countries to pool their resources in moving towards sustainable management of tuna fisheries in the Southeast Asian region, especially in addressing the various issues and concerns (**Box 1**) and in order to attain the desired goal of the proposed Regional Cooperation, the SEAFDEC Council suggested that SEAFDEC could consider developing a draft plan of action under the Regional Cooperation to include efforts in enhancing traceability, development of tuna catch certification scheme, conduct of joint stock assessment, and combating IUU fishing in tuna fisheries.

References

Chee P.E. 1995. Monitoring landings of Taiwanese tuna long-liners at Penang Harbour. *In: Status of Interactions of Pacific Tuna Fisheries in 1995*. Shomura, R.S., Majkowski,

J., Harman, R.F. (Eds). Proceedings of the Second FAO Expert Consultation on Interactions of Pacific Tuna Fisheries, Shimizu, Japan, 23-31 January 1995; pp 251-259

FAO. 2006. FAO FishStat Plus. FAO, Rome, Italy

Globefish. 2008. Global Production and Marketing of Canned Tuna. Globefish Research Programme, Vol. 93 (April 2008)

Infofish. 2007. Indonesian Tuna at Global Market. Infofish, Malaysia

SEAFDEC. 2010. Fishery Statistical Bulletin of Southeast Asia 2010. 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

SFP. 2009. Scoping out: Indonesian Tuna Fisheries – Sustainable Fisheries Partnership, Indonesia

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