

Regional Cooperation for Sustainable Utilization of Neritic Tunas in Southeast Asia

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The oceans and seas of the Southeast Asian region abound with several species of oceanic and neritic tunas that are of high economic importance. Such resources not only generate export revenues for the countries of the region but also provide important protein sources for local populace. While oceanic tunas migrate over large sea areas and oceans, neritic tunas inhabit the economic zones and in the sub-regional seas of Southeast Asia. Statistical reports have indicated that oceanic tuna resources have been declining, this situation makes neritic tuna resources becoming more economically-important to the extent that the resources have increasingly become the target for commercial and local fisheries, especially that attractive prices are offered for such tunas by the fish processing industry. The distribution and migration of neritic tuna stocks in the waters and sub-regions of Southeast Asia however, as well as their utilization remain uncertain making it difficult to develop appropriate tuna management plans at national and sub-regional levels. Therefore, it has become necessary to establish a regional cooperation for the utilization of neritic tunas for the Southeast Asian region to address critical issues and concerns on their sustainability.

Recommendations provided by the Tuna Regional Fisheries Management Organizations (TRFMOs), such as the Indian Ocean Tuna Commission (IOTC) and the West Central Pacific Fisheries Commission (WCPFC), have been used as basis for the development of management plans and conduct of activities for the sustainable exploitation of oceanic tunas but not for neritic tunas. It is therefore crucial for the Southeast Asian region to develop common approaches for the management and utilization of neritic tunas, to ensure the sustainable use of available regional neritic tuna resources and to maximize the economic benefits that could be gained by the countries in the region. Such approaches call for the development of collaborative management plans for neritic tuna fisheries in the region and sub-regions, in order that the sustainability of these rich and important trans-boundary resources is assured.

The need to develop a plan of action for regional cooperation on neritic tunas in the Southeast Asian region was recognized and expressed by the SEAFDEC Member Countries during the 45th Meeting of the SEAFDEC Council in April 2013. It was also during such Meeting that the SEAFDEC Council of Directors supported the

proposal of the SEAFDEC Secretariat to strengthen regional and sub-regional cooperation for the conservation and sustainable management of neritic tuna fisheries in the Southeast Asian waters. Through such collaborative cooperation, countries and producers should be able to show and verify the sustainability of neritic tuna fisheries. In order to support the need to develop collaborative management approaches, a case study was conducted by SEAFDEC Secretariat with support from Government of Japan and Sweden, and with technical support from concerned SEAFDEC Member Countries to review the information on tuna catch from the Southeast Asian region and to come up with the status and trends of neritic tuna fisheries in the region. Meanwhile, consultations with Member Countries have been carried out to determine the ways and means of promoting regional and sub-regional cooperation on the sustainable utilization of neritic tuna resources in the Southeast Asian region.

The Case Study

The case study conducted by the SEAFDEC Secretariat was aimed at determining the status and trends of neritic tuna exploitation from the EEZ of Southeast Asian countries focusing on the four most economically-important neritic tunas in the region (**Fig. 1**), namely: longtail tuna (*Thunnus tonggol*), kawakawa or eastern little tuna (*Euthynnus affinis*), frigate tuna (*Auxis thazard*), and bullet tuna (*Auxis rochei*). The study was conducted in collaboration with national focal points from five major tuna producing countries of Southeast Asia, namely: Indonesia, Philippines, Thailand, Vietnam, and Malaysia. Analysis of the tuna production centered on the exploitations within the EEZ of the Southeast Asian countries, where the data and information used for the analysis were sourced from national fisheries statistics,

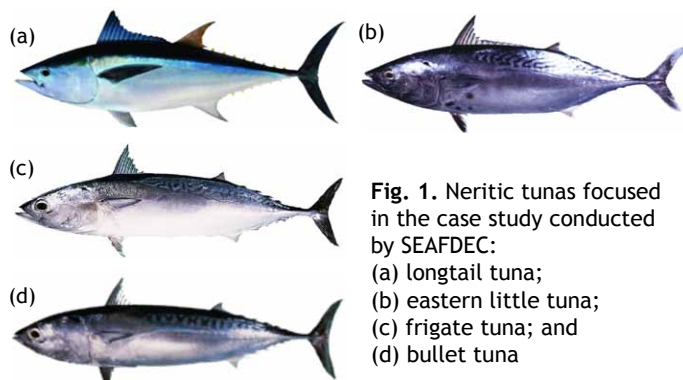


Fig. 1. Neritic tunas focused in the case study conducted by SEAFDEC:
(a) longtail tuna;
(b) eastern little tuna;
(c) frigate tuna; and
(d) bullet tuna

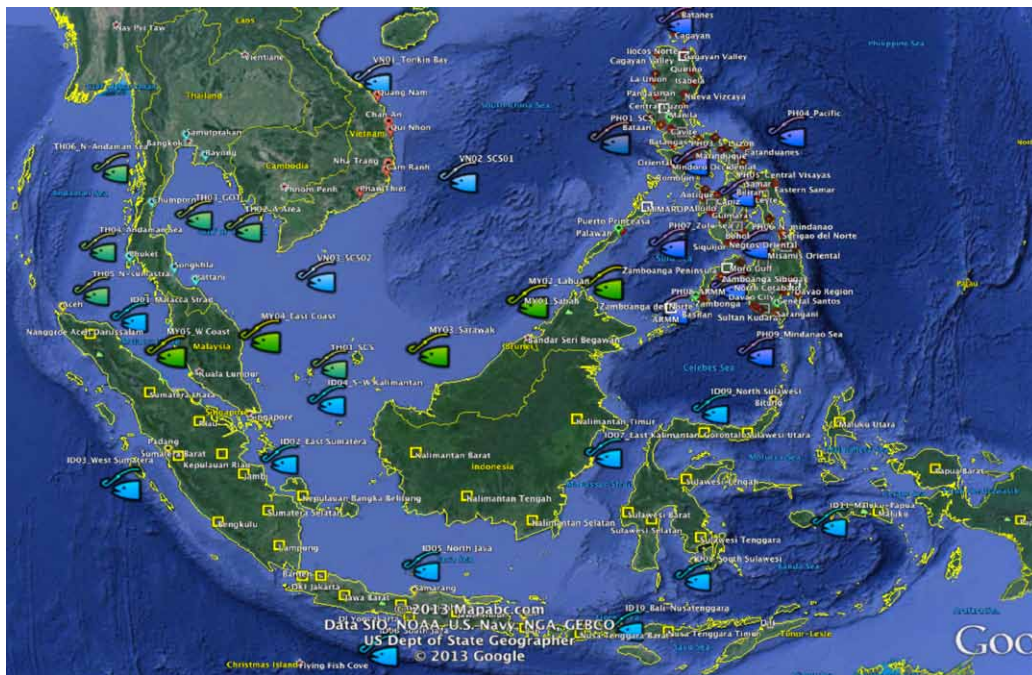


Fig. 2. Locations of fisheries administrative offices, selected landing sites and identified fishing areas by country

data samplings at selected landing sites and results of consultations with national focal points. **Fig. 2** shows the fisheries administrative offices responsible for tuna data collection in the Philippines and Indonesia, the selected landing sites for data collection in Thailand and Vietnam, and the fishing areas within the EEZ of Southeast Asian countries.

The origin/fishing grounds and species composition of neritic tunas were examined and analyzed to warrant the status of tuna exploitation in the specific sea areas in the Southeast Asian region, as shown in **Fig. 2**.

Neritic Tuna Fisheries of Southeast Asia

In the Southeast Asian region, neritic tunas are caught commercially using three main fishing gears, namely: purse seines, ring nets (mainly in the Philippines), and drift gillnets. Three types of purse seine operations are adopted in many Southeast Asian countries such as purse seines with searching methods, those associated with fish aggregating devices (FADs), and with luring light methods. In Thailand as well as in other countries, such as Cambodia, Malaysia, Myanmar, Brunei Darussalam, and Indonesia, the purse seine used must have evolved from the Chinese purse seine which became widely used after 1957. This purse seine has been developed with a unique style of seining appropriate to conditions in the waters of Thailand, although such gear was initially intended to catch small pelagic fishes other than tunas. Targeting the small tunas using the Thai purse seine fishery started in 1982 with the expansion of the country's tuna canning industry. The Thai purse seine fishery is labor-intensive requiring 30-40 crew members to work on vessels with sizes that range from 25 to 30 m.

The length of the nets range from 800 to 1,250 m while the nets' depths range from 70 to 120 m and mesh sizes from 2.5 to 9.7 cm. Recently, modern purse seiners are equipped with radar, depth sounder, sonar transceiver, and satellite navigational instruments. Compared with purse seine operations nowadays, drift gillnets have also played an important role in neritic tuna fisheries, especially in the early period of development of small pelagic fisheries in many Southeast Asian countries. Specifically, drift gillnets are important for some countries such as in Vietnam where 37% of its total neritic tuna catch of 72,650 metric tons (mt) is produced using drift gillnets (Nguyen Ba Thong, 2013).

Status and Trends of Neritic Tuna Production

Based on the countries' statistical records, the main sources of neritic tuna production of Southeast Asia are Indonesia, Philippines, Vietnam, Malaysia, and Thailand. However, it should be noted that neritic tuna production of Vietnam has not been properly recorded in its national statistics, although the Research Institute of Marine Fisheries (RIMF) of Vietnam estimated the country's neritic tuna production in 2012 to be 72,650 mt. In addition, tuna production of Brunei Darussalam of less than 100 mt per year comprises mostly the eastern little tuna and skipjack tuna. The total production of neritic tuna in Southeast Asian waters in 2010 could therefore be estimated at about 857,440 mt (including the constant volume of from Vietnam as of 2012 and production from Brunei Darussalam). The trends of neritic tuna in four (4) countries during the period from 2004 to 2010 is shown in **Fig. 3** and specifically, it is shown in **Fig. 3(a)** that the region's total production of neritic tunas varied between 700,000 and 800,000 mt, even if production from

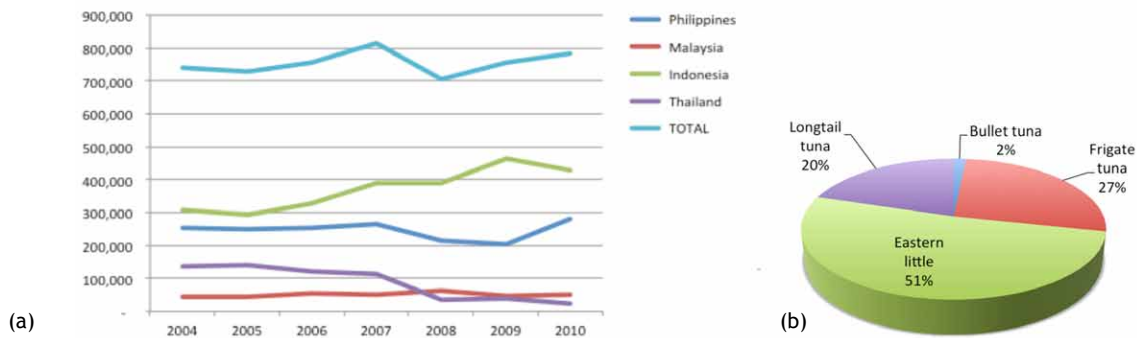


Fig. 3. Trends of neritic tuna production of the Southeast Asian countries in 2004-2010 (a); and species composition of neritic tuna catch in 2010 based on information from four main tuna producing countries of Southeast Asia (b)

Thailand seemed to decrease from 136,227 mt in 2004 to 23,896 mt in 2010, a matter that needs to be reckoned with.

In 2007-2008, the system of compiling national fisheries statistics of Thailand was improved in order to exclude the production data from import as well as those from outside the EEZ of Thai waters, *e.g.* south of the Gulf of Thailand (Malaysia and Indonesia), and north-south of the Andaman Sea (Malaysia and Myanmar). As a result, production of Thailand had changed from 112,000 mt in 2007 to 35,000 mt in 2008, while an increasing trend of neritic tuna production could be noted in the case of Indonesia, from 293,461 mt in 2005 to 464,016 mt in 2009, while in the case of Malaysia, the production slightly varies but within the average of 51,000 mt per year in 2004-2010, similar to the production trend of Thailand.

Species Composition of Neritic Tuna Production

As shown in **Fig. 3(b)**, eastern little tuna was the predominant neritic tuna species caught from the Southeast Asian waters in 2010, accounting for 51% of the overall neritic tuna production, followed by frigate tuna at 27%, longtail tuna at 20%, and bullet tuna of about 2%. However, the species composition of neritic tuna production by country in 2004-2010 (**Fig. 4**) indicated that in the Philippines, only two neritic tunas (eastern little tuna and frigate tuna) have been recorded from fishing areas in 10 locations, namely: (1) Western Luzon; (2) Central Visayas; (3) Northern Luzon; (4) Pacific Ocean; (5) Sulu Sea; (6) Autonomous Region of Muslim Mindanao (ARMM) Area; (7) Mindanao Sea; (8) Southern Luzon; (9) Northern Mindanao; and (10) Moro Gulf. For Indonesia, production of four neritic tunas recorded in its national fisheries statistics came from fishing grounds in 11 areas, namely: (1) West Sumatera; (2) South Java; (3) Malacca Strait; (4) East Sumatera; (5) North Java; (6) Bali-Nusatenggara; (7) South/West Kalimantan; (8) East Kalimantan; (9) South Sulawesi; (10) North Sulawesi; and (11) Maluku-Papua, although before 2004, neritic tuna was recorded as unidentified species. For Malaysia, only longtail tuna was recorded before 2003 but later the other two neritic tunas (bullet tuna and eastern little tuna) have

already been included in its national statistics. The fishing areas for neritic tunas in the EEZ of Malaysian waters are in the: (1) West Coast Peninsular; (2) East Coast Peninsular; (3) off the coast of Sarawak; (4) off the coast of Sabah; and (5) Labuan. For Thailand, recording of four neritic tunas started in 2009 where the fishing areas are located in the Gulf of Thailand and Andaman Sea.

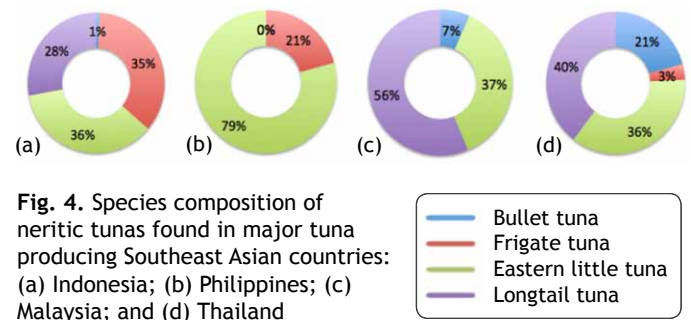


Fig. 4. Species composition of neritic tunas found in major tuna producing Southeast Asian countries: (a) Indonesia; (b) Philippines; (c) Malaysia; and (d) Thailand

Relative Abundance and Distribution

The relative abundance and distribution of the neritic tuna in the EEZ of Southeast Asian countries in 2010 (**Fig. 5**), includes production of neritic tuna from Vietnam in 2012 of about 72,650 mt, assuming that not much changes occurred in its catch of about 72,000-73,000 mt in 2010 and based on reports that most of the country's neritic tunas are caught from the southeast coast of Vietnam. Therefore, the total tuna exploitation based on specific sea areas can be estimated at: 121,376 mt in South China Sea; 126,672 mt in Natuna Sea, part of southern South China Sea; 144,100 mt in Sulu Sea; 88,600 mt in Celebes Sea; 90,000 mt in Banda Sea; 65,000 mt in the east coast of the Philippines; 58,300 mt in Indian Ocean (S-Java); 50,100 mt in West Sumatra; 50,000 mt in Andaman Sea; and 474 mt in the Gulf of Thailand.

Conclusion and Recommendations

Considering the distribution of neritic tunas in Southeast Asian waters (**Fig. 6**), it could be gleaned that almost 74% of longtail tuna are found in the Indonesian waters particularly in Natuna Sea down to the north Java and

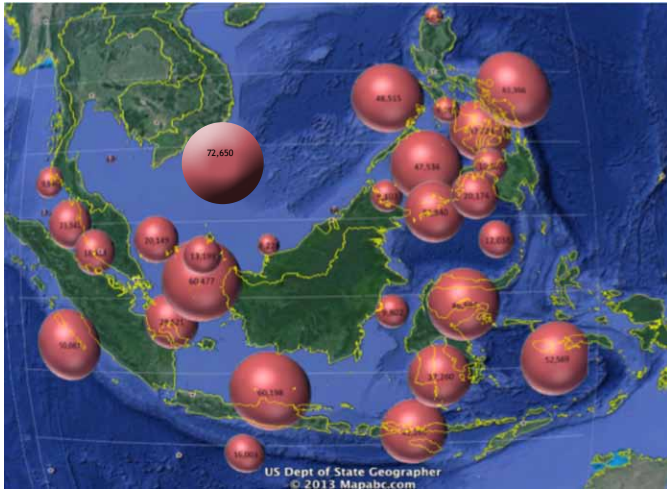


Fig. 5. Relative abundance and distribution of neritic tunas in Southeast Asian waters (as of 2010)

north Sulawesi Seas. Meanwhile, less than 20% could be found in the east and west coast of Peninsular Malaysia. For frigate tuna, 70% of the total exploitation also comes from Indonesian waters while another 30% are from Philippine waters.

While eastern little tuna represents about 55% of the Philippine tuna resources, the other 35% comes from Indonesian waters. For bullet tuna, about 30% each are from Indonesia and Malaysia, while the remaining 40% are from Thai waters (Fig. 6). In the Gulf of Thailand (GOT), neritic tuna production had been recorded from the EEZ of the Gulf of Thailand and from the east and south of the Gulf of Thailand outside the EEZ as shown in Fig. 7, leading to varying volumes, *i.e.* from 8,000 to 19,000 mt from 1998 to 2007, while production rapidly decreased from 10,000 mt in 2007 to 5,000 mt in 2008, and 474 mt in 2010.

Similarly, data on neritic tuna exploitation from outside of the EEZ in the east and south of the GOT indicated different volumes, *i.e.* 60,000 mt in 1998 increasing to 110,000 mt in 2005, but drastically decreased from 96,000 mt in 2006 to only 13,200 mt in 2010. This was a result of the improvement of data recording system from 2005 to 2010 when data on tuna exploitation within the EEZ and outside the EEZ of the Gulf of Thailand were segregated (Fig. 7a). Meanwhile, neritic tuna exploitation in the east coast of Peninsular Malaysia and off Sarawak during the

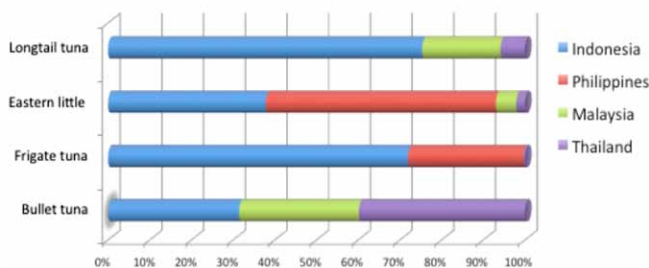


Fig. 6. Distribution of neritic tunas in Southeast Asian waters

same period from 2005 to 2010 varied from 20,000 mt to 33,000 mt, indicating that the resources had not declined. Such information makes it necessary to identify the origin of neritic tunas exploited outside the EEZ of the GOT (Fig. 7b).

As for the exploitation of neritic tunas in Indonesia during the same period from 1998 to 2010, production had increased gradually from 206,000 mt in 1998 to 464,000 mt in 2009. This trend ensures that the country's neritic tuna resources are still in good condition even though it is expected that the increasing production from Indonesian maybe linked to the decreasing trends of exploitation of Thailand particularly when the fishery policy on joint venture of these two countries was changed after 2007.

Way Forward for Sustainable Utilization of Neritic Tunas

Recognizing the need to develop a Regional Plan of Action on Sustainable Fisheries of Neritic Tunas in Southeast Asia, the 45th Meeting of the SEAFDEC Council endorsed the proposal of SEAFDEC Secretariat to conduct regular stakeholders' consultations for the development of the Regional Plan of Action for Sustainable Neritic Tuna Fisheries (RPOA-Neritic Tuna). Thus, SEAFDEC with funding support from the SEAFDEC-Sweden Project together with ASEAN-SEAFDEC Member Countries organized the "Consultative Meeting on Regional Cooperation Sustainable Neritic Tuna Fisheries in Southeast Asian Waters" in October 2013 in Songkhla

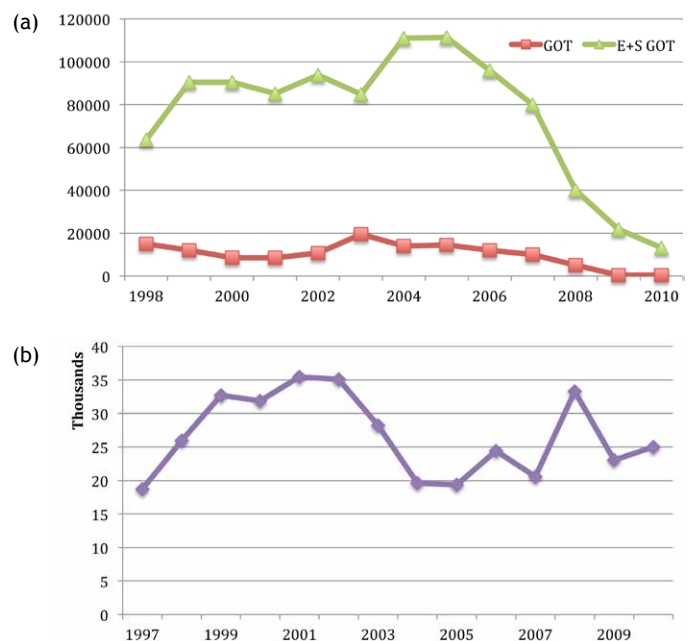


Fig. 7. Neritic tuna exploitation in the EEZ and outside EEZ of the Gulf of Thailand during 1998-2010 (a); and neritic tuna exploitation in east coast of Peninsular Malaysia and off Sarawak during 1998-2010 (b)

Box 1. Prioritized issues to be considered for developing the RPOA-Neritic Tuna

At National Level

- Open access, management of fishing capacity necessary
- Undetermined resources, status and trend of neritic tuna need regular updating
- Insufficient data/information, data collection systems should be improved
- IUU Fishing
- Transshipment of catch
- Double flagging, poaching
- Post-harvest losses
- Appropriate technology of fishing gears and devices should be promoted
- Infrastructure of fishing port/landing sites inadequate
- Unfair benefits allocation, working conditions and labor issues should be settled
- Supporting policy from Government should be assured
- Capacity building necessary

At Regional Level

- Sub-regional fisheries management for neritic tuna should be developed
- Assessment of the status and trends of neritic tuna at sub-regional level should be carried out through the establishment of working groups
- Intra-regional trade should be enhanced through harmonized standard catch documentation systems
- Sharing of data and information necessary, e.g. through the development of list of fishing vessels, etc.
- Cooperation with other sub-regional, regional, international organizations should be sought

Box 2. Expected outputs of the RPOA-Neritic Tuna

Result 1: Generation and uptake of demand driven fisheries technologies and innovations facilitated

Result 2: Policy options for enhancing the performance of the fisheries subsectors in the Southeast Asian region facilitated

Result 3: Capacity for fisheries research development in Southeast Asia strengthened, and

Result 4: Availability of information on fisheries innovation enhanced

Province, Thailand. The Meeting had provided the platform to initiate and coordinate a process of promoting dialogue and cooperation on “regional” (neritic) tuna resources, while information on the status of neritic tuna in the region and sub-regions were revealed and shared as well as experiences of SEAFDEC and partner organizations at regional and sub-regional level. Issues related to neritic tuna fisheries and trade were also discussed taking into account the current problems/challenges in different sub-regional areas/fishing grounds, *i.e.* South China Sea, Gulf of Thailand and Andaman Sea, and Sulu-Sulawesi Seas.

The need to update the status and trend of neritic tuna resources and improve collection of data/information was highlighted due to inadequacy of data collection systems in many countries. In addition, it was also suggested during the October 2013 Consultative Meeting that sub-regional management of neritic tuna should be established through cooperation among countries and with sub-regional, regional, international organizations.

Box 3. Scope of interventions corresponding to program level strategic results for the development of the RPOA-Neritic Tuna

- Improving fisheries productivity:** this is meant to address productivity constraints at system levels by applying effective fisheries management tools which include management of fishing capacity and reduction of IUU fishing-related activities in tuna fisheries such as transshipment, double flagging, etc.
- Improving access to markets:** a key issue to be addressed in order to support access of fisheries to market, is traceability system by enhancing regional standard/catch documentation system, while also addressing the need to enhance intra-regional and international trading of tuna in the region.
- Improving data collection and development of key indicators:** this is meant to better understand the status and trends of tuna resources in the region. Assessment of tuna stocks at national and sub-regional areas would be promoted through the establishment of stock assessment working groups so that existing science-based fisheries management for long-term impacts is ensured. Research programs could also cover onboard fish handling practices to avoid post-harvest losses.
- Improving sustainable interaction between fisheries and the marine ecosystem:** Appropriate technology of fishing gears and devices to be promoted for harvesting neritic tunas to reduce by-catch species.

Furthermore, prioritized issues were identified during the October 2013 Consultative Meeting (**Box 1**), which could be used for drafting the Plan of Action Sustainable Neritic Tuna Fisheries (RPOA-Neritic Tuna) in Southeast Asian Waters at national and sub-regional levels.

The October 2013 Consultative Meeting also agreed that the scope and goals of the RPOA-Neritic Tuna should enhance sustainable fisheries of neritic tunas through the integration of fisheries management and ecosystem interventions in order to attain the outputs as planned (**Box 2**). Moreover, the scope of interventions should be able to contribute to the attainment of the four program level strategic results as shown in **Box 3**.

References

- Nguyen Ba Thong. 2013. Status of Neritic Tuna Fisheries in Vietnam. Paper presented during the Consultative Meeting on Regional Cooperation Sustainable Neritic Tuna Fisheries in Southeast Asian Waters, 8-10 October 2013, Songkhla Province, Thailand

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