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Enhancing Safety at Sea for Small-scale Fishing Boats in Southeast Asia

Bundit Chokesanguan, Sutee Rajruchithong and Worawit Wanchana

The Southeast Asian Fisheries Development Center (SEAFDEC) has been implementing activities on Safety at Sea for small-scale fishing boats in conjunction with the global Code of Conduct for Responsible Fisheries (CCRF) which prescribed that: (8.1.5) *"States should ensure that health and safety standards are adopted for everyone employed in fishing operations. Such standards should not be less than the minimum requirements of relevant international agreements on conditions of work and services"*. Taking into consideration such article of the CCRF, the Regional Guidelines for Responsible Fishing Operations in Southeast Asia (SEAFDEC, 2000) specifically stipulated that: (8.1.5 (1)) *"since the minimum requirement in relevant international agreements including SOLAS and IMO is only applicable to vessels larger than 24 m LOA, and considering that majority of the fishing boats in the region is smaller than this size, States should be encouraged to elaborate special safety standards and policies with emphasis on smaller boats. The FAO/ILO/IMO Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels (1980) may be used as reference."* In addition, the Regional Guidelines also indicated that: (8.1.5 (2)) "*Regional organizations including SEAFDEC should support the States to urgently formulate such standards for smaller fishing vessels in the region*."

Thus, activities on Safety at Sea targeting the Southeast Asian region had been conducted as part of the project on Responsible Fishing Technology and Practices implemented by SEAFDEC Training Department (SEAFDEC/TD) and

Box 1: Recommendations on Safety at Sea for Small Fishing Boats in Southeast Asia (SEAFDEC, 2003)

We, ASEAN Technical Officers related to the safety at sea for small fishing boats, met in Bangkok, Thailand from 17 to 19 December 2003 for the Workshop on Safety at Sea for Small Fishing Boats, and agreed on the following recommendations as basis for formulating comprehensive framework on the program to promote the issue of safety at sea for small fishing boats.

1. Leave the definition of 'small fishing boats' and 'operational range' to individual countries
2. Promote the registration of small fishing boats
3. Promote coordination between concerned authorities on monitoring and control of small scale fishing boats' safety as well as on socio-economic considerations
4. Strengthen local authorities and promote policies of safety at sea within the coastal communities
5. Promote technical and financial support from authorities, including subsidies, at all levels for issues of safety at sea
6. Identify and promote basic requirements for safety at sea in the areas of:
   - research on the design and construction of small fishing boats including the modification of traditional-type boats
   - safety equipment including fire fighting and life-saving appliances
   - regular boat inspection systems
7. Implement training & education programs for all stakeholders including fishers and boat builders, for the basic requirements of:
   - boat design and construction
   - equipment and its correct use
   - search and rescue
   - occupational health and safety awareness, including the avoidance of dangerous fishing practices
   - awareness of environmental factors
8. Develop and promote the use of appropriate communication systems for:
   - weather forecasting information
   - search and rescue systems
9. Development of appropriate incident reporting and investigation systems for the purpose of improving safety at sea.

supported by the Government of Japan Trust Fund Program for SEAFDEC. Among the major activities conducted where the Regional Workshop on Safety at Sea for Small Fishing Boats in December 2003, and the sequel Second Regional Workshop in April 2010. The first Regional Workshop on Safety at Sea for Small Fishing Boats held at SEAFDEC/TD in Samutprakarn, Thailand from 17 to 19 December 2003 (SEAFDEC, 2003) reviewed the current situation of Safety at Sea in most countries in Southeast Asia as well as in other parts of the world. The first Regional Workshop came up with recommendations (**Box 1**) which had been applied for most of the Southeast Asian countries for enhancing their respective comprehensive frameworks to promote the issue of Safety at Sea for small fishing boats.

Almost seven years later on 20-23 April 2010, SEAFDEC/TD again convened the Second Regional Technical Workshop on Safety at Sea for Small Fishing Boats in response to the recommendation at the first Regional Workshop, *viz.: "Considering that Safety at Sea is a serious problem in developing countries, the progress of the initiatives of the respective Southeast Asian countries in improving Safety at Sea for small fishing boats should be reviewed taking into account the international and regional initiatives on Safety at Sea"*. As an added objective, the second Regional Workshop (SEAFDEC, 2010) also gave special focus on the establishment of a mechanism for recording the accidents at sea of fishing boats, and on the need to improve the living conditions of fishers on fishing boats in the Southeast Asian region.

Improving Safety at Sea Conditions: Initiatives in Southeast Asia

The countries in the Southeast Asian region have been exerting efforts to improve safety at sea conditions considering the significant number of accidents that happened at sea especially during fishing operations. As reported during the 2003 Regional Workshop on Safety at Sea and the sequel 2010 Regional Technical Workshop, some countries in the Southeast Asian region have already advanced their respective programs and activities with the compilation of data on accidents and fatalities at sea during fishing operations and enhancing the adoption of preventive measures. Indonesia for example, has translated the FAO publication on Safety Practices Related to Small Fishing Vessel Stability into Bahasa Indonesia and used as awareness-raising material throughout the whole country. Myanmar had also ratified the 1995 IMO Convention on Standards of Training, Certification and Watch-keeping for Fishing Vessel Personnel (STCW-F). In general, most countries have also initiated the registration of fishing boats, gears and fishers with Malaysia already leading the way. The initiative of Thailand to replace about 5,000 wooden boats that were lost during the 2004 Asian Tsunami by FRP (fiberglass reinforced plastics) boats was considered noteworthy since there have been recent campaigns to reduce footprints from fisheries. The need to find a replacement of wood as material for boat construction (*e.g.* FRP) is necessary as wooden boats had been found to increase footprints in fisheries. The status and progress of the countries' initiatives in improving safety at sea conditions are summarized in **Box 2**.

Moreover, recognizing that the Southeast Asian region has recently been confronted with extreme changes in weather patterns which greatly affect the coastal fishing communities, SEAFDEC in collaboration with the Swedish International Development Cooperation Agency (Sida) has implemented a project that emphasized on the need to record the number of all fishing boats in the region (small and large) to be able to regulate their fishing activities when and where necessary. Furthermore, the SEAFDEC-Sida Project also promotes the establishment of a regional fishing vessel record and

Box 2: Status and progress of activities related to safety at sea in Southeast Asia

Brunei Darussalam

For manning small fishing boats of the country which mostly operate in zone 1 (0-3 nautical miles offshore and zone 2 (3-20 nautical miles offshore), each seagoing fisher must undertake training and certification in seamanship and navigation considering that most boat captains are not formally trained. In addition, all small fishing boats must be registered with proper authorities for safety reasons. Commercial fishing boats are inspected and certified by the Marine Department of Brunei Darussalam for safety requirements such as navigational lights, life jackets and navigational instruments and electronics (Suru, 2010). The Fisheries Department requires all fishing boats to carry onboard functional radar, echo sounder, GPS, VHF radio as well as proper navigational lights prior to issuance of fishing license. Some problems have however, been encountered in the implementation of the regulations which include the fact that most skippers or boat captains are foreign workers, who might be experienced but are not licensed to bring the vessels to sea. In general, all navigation and communication equipment installed onboard fishing boats should comply with the level of the SOLAS regulations and that fishing vessel owners should also provide onboard occupational safety and health awareness training.

Cambodia

Information on small fishing boat accidents in Cambodia are very limited since there is no mechanism for collecting accidents at sea because the country's National Committee for Disaster focuses their efforts in inland waters (Chhea, 2010). Generally, the country's fishing boats use navigational lights, compass, and some are equipped with GPS. However, certain incidents of sea accidents had been reported such as capsizing of boats that resulted in losses of lives of fishers due to inadequate safety equipment carried onboard, as most of small fishing boats are not equipped with life jackets and life buoys as well as fire extinguisher, although most fishing boats use communication systems at sea such as radio (AM, FM) and mobile phones. The Ministry of Water Resources and Meteorology provides information on weather forecast although the information on marine weather is limited so that most fishers had been using the weather forecast provided by Thailand and Vietnam authorities. The country's Proclamation on Technical Management of Fishing Boats actually requires that all fishing boats must follow the regulation on technical management of fishing boat to ensure safety of boats and crew, which includes technical requirements for fishing conditions, *i.e.* putting the national flag, registration plate number, light and other signs of identity; equipping with radio communications, firefighting equipment, life jackets, lifebuoy, binocular, compass, emergency medicines; and assuring good quality of engine and boat. Moreover, the Fisheries Administration of Cambodia with support from FAO is now developing measures to improve safety at sea and reduce vulnerability for fishers in Cambodia, through a 4-year project that started in 2010.

Indonesia

The responsibilities of Indonesian competent authorities in ensuring safety at sea include among others, the conduct of safety and health training, imposing minimum requirements for fishing vessel personnel, development of manning regulations based on size and type of fishing vessel, conduct of fishing vessels inspection, promotion of health and safety management, improvement of access to insurance, and establishment of report and investigation system (Suharyanto, 2010). A preliminary study on Safety at Sea in Indonesia was conducted through random sampling of 66 fishing vessels comprising the tegal (Danish seiner), pekalongan (Purse seiner), and cilacap (mini long-liner, gill-netter). The results showed that 68 persons died due to accidents at sea, such as boat capsized (46%), man got overboard (27%), sick and fatigue (20%), and fishing operation (7%). The accidents during fishing operation could be due to inadequate fishing competence, insufficient information and absence of emergency drills, and limited lightings during night fishing. Of the number of boats capsized, cilacap accounted for 81% and tegal 19%, mainly due to rough seas and stability of the boats. Considering that stability of the fishing vessel has been considered one of the major causes of frequent capsizing of fishing boats leading to fatal accidents at sea, the FAO publication on Safety Practices Related to Small Fishing Vessel Stability (Gudmundsson, 2009) which includes the basic principles of stability and provides simple guidance for vessel crew to maintain adequate stability of their vessels, has been translated into Bahasa Indonesia and disseminated nationwide as awareness raising material.

Lao PDR

The fishing boats in Lao PDR are not registered and without safety equipment onboard, fishing is not licensed and fishers are not registered since no certification is required (Akhane, 2010). Moreover, there are no full time fishers in Lao PDR considering that during the rainy season, the people devote their time in cultivating rice and it is only during the hot season that the people would go fishing. With inland waters that comprise the Mekong River and its tributaries, and two reservoirs, a plan is being developed to improve the safety at sea aspects in Lao PDR that includes conducting HRD for fishers, creating awareness on safety in inland waters, establishing of registration system for fishing boats, setting up of reporting network, and establishing a system of recording fishers even if they are part-time fishers only. The Outline for Best Practices for Safety at Sea in the Fisheries Sector which was developed during the FAO Expert Consultation on in November 2008 (FAO, 2009) would also be used as guide in developing the country's programs on the promotion of safety aspects in the inland waters, considering that the word "sea" in "safety at sea" includes oceans, seas, bays, sounds, estuaries, rivers and lakes as well as the aquaculture environment.

Malaysia

Malaysia has already advanced its efforts by registering all fishing boats and fishers as well as maintaining standards of boats and crews. Thus, all fishing boats in Malaysia must be registered and would be identified through various markings such as the fixed registration number corresponding to the state and carved on both sides of the fore part of the hull of the boat, code zone to be painted on both sides of the wheelhouse in while with black background, color of the wheel house (for inboard powered boats) which should correspond to the color specified for the state (Noorliza, 2010). The fishing vessel registration system is solely under the responsibility of the Department of Fisheries Malaysia in accordance with the Fisheries (Maritime) Licensing of Local Fishing Vessel Regulations 1985. In the renewal of the license of fishing boats, one of the requirements is the availability of sufficient safety equipment onboard as well as the vessel condition in terms of sea worthiness. A plastic Vessel Number is issued out each year upon renewing the fishing license for enforcement purpose, with the Fisheries Officer monitoring the validity of the license in Malaysian waters. In addition to the Department of Fisheries Malaysia, the other agencies also responsible for Safety at Sea include the Fisheries Development Authority of Malaysia (LKIM) and the Malaysian Maritime Enforcement Agency (MMEA).

Box 2: Status and progress of activities related to safety at sea in Southeast Asia *(cont'd)*

Myanmar

The country has put in place a data recording system mainly with the Department of Fisheries in coordination with other competent authorities in the country, which also collects information on accidents related to fishing operation (Sann and Htwe, 2010). Under this system, the detailed causes of some accidents and casualties in the industry had been analyzed and the countermeasures identified. Some of the measures on safety at sea include: compilation of check-in and check-out system; daily reporting of weather conditions; using locally made floating equipment for life saving; using traditional medicine for emergencies; communication equipment on board (although still very limited). Strict law enforcement on fishing activities is carried out by the country's Department of Fisheries (DOF), Navy, Coast Guard, Customs Department, and Police Force. The DOF is responsible for data recording, analysis and feedback mechanism as well as other agencies such as the Navy, Coast Guard and Police Force. All concerned agencies have their respective team to take charge of collecting and analyzing data, but there is a need to synchronize all data collected. The country's statistics data showed that from 2003 to 2009, the total number of accidents related to fishing operation was 24/year on the average, indicating a great need to improve safety in the fishing industry. The training provisions in the 1995 STCW-F Convention (IMO, 1995) had been implemented in Myanmar which led to the reduction of accidents at sea to only 6 in 2009-2010.

Philippines

The common accidents involving small boats in the Philippines include capsizing and sinking mainly due to poor stability, this is in spite of the installation of outriggers in small boats used in the country. In addition, the other causes also include drifting due to bad engine installation and maintenance, lack of fuel and inadequate knowledge of crew in troubleshooting; collision due to the limited navigational lights, tired crew and bad weather conditions; fire because of bad engine installation and poor cooking facilities; and work-related causes brought about by slippery deck, unprotected machinery and tired crew (Eleserio, 2010). In an effort to improve the safety of small boats, registration of small boats had been initiated and relevant regulations strictly enforced (*e.g.* safety regulations, issue boatbuilding/boatyard certification, conduct relevant training programs). Under the Republic Act No. 8550 or the Philippine Fisheries Code of 1998, Article 1 (Municipal Fisheries), Section 19 specifies that the Local Government Units (LGUs) with the assistance of the Fisheries and Aquatic Resource Management Council (FARMC) should maintain a registry of municipal fisherfolk and registry of fishing vessels by type of gear and other boat particulars which should be updated annually. In addition to the Bureau of Fisheries and Aquatic Resources (BFAR), the other agencies responsible for Safety at Sea in the Philippines include the FARMC, LGUs, Maritime Industry Authority (MARINA), the Philippine Coast Guard, and the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAG-ASA), the country's national weather bureau.

Thailand

In Thailand, Safety at Sea has been considered from the point of view of fisheries management, as such the initiatives undertaken by the Department of Fisheries (DOF) include vessel registration and licensing, enforcement of closed area and closed season, promotion of offshore fisheries and joint ventures, and employment of foreign labor and crew (Kanit Chuapan, 2010). However, natural disasters had affected the safety of fishing boats and fishers, such as Typhoon Gay in November 1989 where about 200 fishing boats and more than 600 crew members were reported missing. During the Asian Tsunami in December 2004, more than 5,000 boats were damaged and more than 700 fishers died. Efforts had been made by the DOF to replace the lost boats during the Asian Tsunami with fiberglass fishing boats, which have been designed with maximum safety in mind and easy to construct than the wooden boats. Moreover, based on the initiatives of His Majesty the King, experiments on installation of sails in the fiberglass boats have been conducted to reduce fuel consumption. The DOF also prescribed that commercial fishing boats should use fishing logbook for reporting their operations and that small-scale fisheries should maintain their fishing vessel record to facilitate implementation of Safety at Sea measures throughout the country.

Moreover, the Thai Maritime Enforcement Coordinating Center (Thai-MECC) or "SORNCHON" also promotes Safety at Sea in coordination with other maritime authorities in the country such as the Royal Thai Navy, Marine Police, Customs Department, Marine Department, and Department of Marine and Coastal Resources (Apichai Sompolgrunk, 2010). With well-trained personnel and efficient communication network, SORNCHON has been involved in the effective search and rescue (SAR) operations.

A case study on safety at sea of trawlers and purse seiners in Thailand was conducted by SEAFDEC/TD to assess the current situation of their safety at sea for effective fisheries management (Bundit Chokesanguan, *et al.*, 2010). The study focused on the fishing boat conditions, navigation and safety equipment, crew and their competence, etc. The results indicated that most trawlers and purse seiners in Thailand do not meet the standard of safety at sea as stipulated in the regulations set by the country's Marine Department and the Department of Fisheries.

During the National Workshop on Registration and Data Collection on Safety at Sea in Thailand conducted by the Department of Fisheries (DOF) on 28 October 2008, the most critical problem on safety at sea was on the non-compliance of most fishing boats with the IMO regulations while boat accidents and death of crew of fishing boats are not reported. The workshop therefore recommended that guidelines on equipment and safety at sea for small and large fishing boats should be developed, knowledge and understanding of crew on the safety issue should be enhanced, and that concerned organizations and agencies should compile and record the fishers and crew before going out to sea.

On the other hand, the Workshop on Reporting Accident Records of Fishing Boats in Thailand conducted by the SEAFDEC/TD on 4 March 2010 came up with recommendations to reduce accidents on boats and promote safety at sea for fishers and related persons, which include: (1) knowledge on safety at sea should be promoted to target groups; (2) owners of fishing boats should take care of their crew; (3) owners of fishing boats should immediately report to concerned government offices in cases of accidents; (4) owners and crew should conduct regular check and maintenance of boats; (5) concerned agencies should conduct regular training on safety at sea; and (6) SEAFDEC should intensify its campaign on safety at sea in collaboration with DOF Thailand, with SEAFDEC providing technical support and promoting coordination with relevant organizations.

Box 2: Status and progress of activities related to safety at sea in Southeast Asia *(cont'd)*

Vietnam

In the past, the Ministry of Fisheries issued a number of technical standards for construction of fishing boats with engine capacities of 50 HP or more. However, for boats with less than 50 HP engines, the technical standards have not yet been developed. Although most fishing fleets comprise small boats, the fleet usually goes to fishing grounds 50-70 km from the shore. The equipment onboard are simple and usually with only the minimum safety standards being complied with. Considering also that most fishing boats are old and have been used for a long time, safety at sea could not be assured. In fact, many accidents occurred because the hulls are either too old or are already decaying and became absorbent or the engines are old which had been purchased second hand. Most accidents also happened because of mistakes of fishers which could be due to insufficient experience and knowledge on marine safety, inadequate safety equipment onboard, and extreme changes in weather conditions. Recently, the Ministry of Agriculture and Rural Development (MARD) conducted training on standard of fishing boat crew for all fishing boats with engine power of more than 20 HP. However, Vietnamese fishers are traditionally superstitious and taking safety equipment onboard would be understood as inviting danger while fishing. The MARD through the Department of Capture Fisheries and Resources Protection (DECAFIREP) is responsible for the management of safety at sea assurance for humans and fishing boats in Vietnam, and has planned to register all fishing boats and fishers very soon (Tran Van Luan, 2010).

inventory as a means of improving the management of fishing capacity in the Southeast Asian region. It should also be noted that the SEAFDEC-Sida Project addresses the concerns on safety at sea, as an important element in the promotion of the sustainability of fisheries in the region (SEAFDEC-Sida, 2010).

Initiatives in Improving Safety at Sea Conditions: Japan Experience

Japan has set the Safety and Standard of Fishing Boats with the corresponding responsible agencies for inspection. For example, boats less than 20 GT are under the responsibility of Japan Craft Inspection Organization, and over 20 GT by the Ministry of Land, Infrastructure, Transport and Tourism. The publication on Standard of Fishing Boats contains 14 chapters, *i.e.*: (1) General Provision; (2) Hull; (3) Machinery Installation; (4) Drain System; (5) Rudder, Mooring and Anchor Systems; (6) Life-saving Equipment; (7) Fire Protection; (8) Crew Accommodation; (9) Navigation Equipment; (10) Electrical Installation; (11) Special Installation; (12) Stability; (13) Maneuvering; and (14) Others. Japan has also prescribed the Standard for Crew which includes licensing of Small Boat Skipper, grouped into: (1) First Class – no limit in terms of sea area; (2) Second Class for flat water or less than 5 nautical miles from the shore; and (3) Special Class for personal water crafts. The license of the Skipper is valid for 5 years and renewable, but requires medical and physical examinations including eye tests and color-blind tests. The agencies responsible for safety at sea conduct lecture classes and publish information materials (*e.g.*, pamphlets, booklets, posters) on safety at sea. Lecture classes are also conducted by some fishers' cooperatives for their respective members (Matsuda, 2010). Moreover, the National Research Institute of Fisheries Engineering (NRIFE) of the Fisheries Research Agency of Japan conducts modeling experiments of boat capsizing. The experiments are carried out by the Fishing Vessel and Machinery Research Group of NRIFE, which comprises the Safety and Stability Research Team, Fishing Vessel Performance Research Team, and the Engine and Machinery Research Team (Miyoshi, 2010).

The Fisheries Agency of Japan through the National Fisheries University in collaboration with some Fisheries Cooperatives also conducted a project to improve the safety of fishers in coastal fisheries. The project focused on how to: (1) reduce the number of accidents and sea disasters of coastal fishing boats; and (2) rescue fishers from accidents, mainly man-overboard (Kawasaki, 2010). Japan through the Tokyo University of Marine Science and Technology (TUMSAT) has also conducted a study on Fishing Boat Safety Engineering aimed at improving the safety of small fishing boats in ship-congested areas (Takeda, 2010).

The 2007 statistics on marine accidents in Japan showed that there had been 1,085 cases of collisions of which 921 (85%) involved fishing boats. However, during the period from 2003 to 2007, accidents involving fishing boats had been reduced from 1293 in 2003, 1203 in 2004, 1023 in

2005, 931 in 2006, and 921 in 2007. Collisions of fishing boats were mainly caused by insufficient lookout (76%). The study also evaluated the various factors that affect the safety of small fishing boats, *i.e.* stability, strength, fishing methods and operations, machinery maintenance, life saving equipment, seaworthiness, and relation with other ships and vessels. Moreover, ship congestion in most waters in Japan has also contributed to the number of collisions. Tokyo Bay, Ise Bay, Seto Inland Sea, Kammon Straits, etc., are active fishing grounds and are known for traffic congestions. It is therefore necessary to look out for other ships and vessels during fishing operations.

In a questionnaire survey conducted under such study, navigation officers were asked to indicate the distance between boats in the fishing grounds, and 17 answered "little bit near but nothing to worry about", 11 said "the distance is safe enough" while 10 said "nothing to worry about". However, the fishers had different answers as 18 said they were "worried about the close distance", and 9 said they were "worried about possible collision". As for the maneuverability of very large crude carriers (VLCC) which are also present in the aforementioned fishing grounds, 15 fishers said "it is poor", 11 said it is "bad", and 6 said "not so poor". In order to maintain safety for small fishing boats especially in ship-congested areas, the study recommended the following approaches for mutual harmony and benefit: (1) cooperative operation; (2) good communication; (3) giving way for other crafts; (4) mutual understanding; and (5) early information on intention to sail in an area.

Initiatives in Improving Safety at Sea Conditions: South Asian Regional Initiatives

The Bay of Bengal, which embraces the sea waters of India, Bangladesh, Sri Lanka and Maldives, is one of the most productive waters in the world supporting a large population of small-scale fishers and contributing to the socio-economic well-being of the coastal communities. Although marine capture fishery is one of the most risky occupations ever known, the issue on safety at sea has not been given much importance in fisheries management in the South Asian region (Yadava, 2010). Towards this end, the Bay of Bengal Programme (BOBP) has been focusing its activities in safety at sea, specifically on fishing crafts (*e.g.* engines, engine installations, sails and beach hauling devices) with the main objective of making the crafts safer, sturdier and more comfortable.

In 2001, the BOBP held a regional workshop that discussed various issues concerning fishing crafts as well as on the integration of safety at sea issues into the Bay of Bengal fisheries management framework. The outcome of the workshop was the Chennai Declaration on Sea Safety for Artisanal and Small-scale Fishers. Moreover in 2007, FAO partnered with the BOBP-Inter-Governmental Organization (BOBP-IGO) to implement a global project on Safety at Sea for Small-scale Fisheries with funding support from Sida. Furthermore, the National Institute of Occupational Safety and Health (NIOSH) of the U.S.A. also worked with BOBP-IGO in improving the surveillance and monitoring of fishing-related injuries and fatalities in the South Asian region.

The Safety at Sea project of the BOBP-IGO focused on: (1) provision and analysis of data to identify the cause of accidents; (2) education and training of trainers, extension workers, fishers and inspectors in safety requirements and good working conditions in fisheries; and (3) awareness building and outreach programs to build a culture of sea-safety within small-scale fishing communities. In its awareness campaign, training and information materials had been produced and disseminated, *i.e.* posters, leaflets, guidelines, video films on engine maintenance, video films on general safety at sea situation, accident reporting form, etc.

Initiatives in Improving Safety at Sea Conditions: Pacific Island Region

The Pacific Island region comprises 22 countries and territories in the Western and Central Pacific Ocean with a population of more than 9 million. Although the region has limited land area (550,000 km^2), it has very large EEZs (50 times greater than the land area of about 30 million km^2), thus safety at sea is of utmost importance. Fishing operations in the Pacific Island region are of two major types, *i.e.* coastal and offshore fishing, with the latter accounting for large volume of catch at 2 million mt/year or about 50% of the global tuna catch, which is important to the region's economies. The region has one of the highest rates of sea accidents in the world but government agencies have limited involvement with safety at sea issues (Blanc, 2010). Efforts to improve sea safety record in the region included activities by UN agencies and other regional organizations. In a survey conducted by FAO in 1991 involving 16 Pacific Island countries, the results indicated that: (1) offshore tuna trawling in small outboard powered skiffs is the most risky activity; (2) many accidents occur on small boats used for both fishing and inter-island transport; (3) main causes include mechanical breakdowns, limited availability of spare parts, cost of life-saving equipment; (4) there is a need for education and training for improving sea safety.

The Secretariat of the Pacific Community (SPC) has been conducting sea safety activities in the region since 1995, specifically addressing the concerns raised during the

Box 3: Recommendations on Safety at Sea for Small Fishing Boats in the Southeast Asian Region (SEAFDEC, 2010)

1. Develop the appropriate incident reporting and investigation systems for the purpose of improving safety at sea, taking into account the following considerations:
   - The draft Guidelines to Competent Authorities in Implementing an Accident Reporting and Analysis System for Small Fishing Vessels currently being developed by FAO;
   - The possible establishment of incentives for fishers, indemnity programs, registration systems for fishing vessels, MCS systems and subsidies to the fishing industry; and
   - The objective of the systems should be appropriate to the size of vessels and types of fishing operations or facilities onboard.
2. Promote the registration of small fishing boats.
3. Promote and ensure that safety aspects, including considerations on the working conditions and socio-economic development, are incorporated and addressed by concerned authorities while improving the monitoring and control of the status and use of small scale fishing vessels.
4. Strengthen local authorities and local organizations and promote the application of safety at sea standards among the coastal communities.
5. Promote technical and financial support from authorities, including subsidies, at all levels for issues of safety at sea, including considerations on working conditions and socio-economic development.
6. Identify and promote the basic requirements for safety at sea in the following areas:
   - research on the design and construction of small fishing boats including the modification of traditional type boats;
   - safety equipment including fire fighting and life-saving appliances;
   - regular maintenance and repair of boats, gear and equipment; and
   - development of regular boat inspection systems.
7. Implement training and education programs for all stakeholders including the fishers, family members, boat builders and others, for basic requirements of:
   - boat design and construction;
   - equipment and its correct use (including avoidance of dangerous fishing practices);
   - search and rescue operations;
   - occupational health, working conditions and safety awareness; and
   - awareness of the environmental factors.
8. Promote awareness among policy makers, central authorities and the broader public on the safety hazards facing people involved in fisheries in order to:
   - Attract more attention and resources to be allocated to safety at sea aspects;
   - Provide knowledge on the working conditions and hardships faced by fishers (which are increasing following the impacts of climate change); and
   - Raise political will to address safety at sea and in strengthening the local organizations.
9. Develop and promote the use of appropriate communication systems for:
   - weather forecasting information; and
   - search and rescue systems.
10. For definition of 'small fishing boats' and 'operational range', reference should be made on the respective rules and laws of individual countries.

Box 4: Proposed Inputs for the "Fish for the People 2020" Conference in June 2011

Inputs for the Resolution

- "Promote the adoption of safety standards for small fishing boats and for everyone engaged in fishing operations, which should not be less than the requirements of relevant international agreements, guidelines and protocols".

Inputs for the Plan of Action

- Mainstream safety at sea into national fisheries management program
- Promote the registration of small fishing boats and fishers, and fishing licenses
- Integrate safety at sea measures into fisheries management plans

Box 5: Inputs for the Regional Program Supporting the Implementation of the New Resolution and Plan of Action

The following are the proposed priority areas or activities on Safety at Sea that could support the implementation of the new Resolution and Plan of Action:

- Develop health and safety standards for everyone in the fisheries sector based on the ILO standards for labor in the fisheries industries
- Develop safety standards and policies for small fishing boats taking into consideration the IMO guidelines on safety of life, boats and equipment at sea
- Develop the appropriate incident reporting and investigation systems for the purpose of improving safety at sea
- Strengthen local authorities and local organizations and promote the application of safety at sea standards among the coastal communities
- Implement training and education programs on safety at sea for all stakeholders including the fishers, family members, boat builders and others
- Promote awareness among policy makers, central authorities and the broader public on the safety hazards facing people involved in fisheries
- Develop and promote the use of appropriate communication systems for weather forecasting information, and search and rescue systems
- Promote the registration of small fishing boats and fishers, and fishing licenses
- Integrate safety at sea into fisheries management plans and programs in order to attain sustainability in fisheries development considering that sustainable fisheries could lead to reduction of vulnerability of coastal fisheries.

1991 FAO survey by intensifying sea safety awareness campaigns and training. While working with FAO on safety at sea issues, the SPC/FAO expert consultation on sea safety in small fishing vessels in February 2004 developed the guidelines for the development and implementation of coordinated national strategies which included: (1) establishment of national sea safety coordinating group comprising motivated people (the "drivers"); (2) generating political will to address small boat safety; (3) development of national sea accident databases; (3) appropriate legislation of small fishing vessels; (4) development of construction standards for fiberglass skiffs; and (5) conduct of formal and informal training directed at fishing communities and government staff. In the FAO study on the relationship between tuna fisheries management and sea safety in the

region in 2009, the results showed that the link between fisheries management and sea safety has been weak or absent in most countries as the objective of fisheries management has been limited to biological and economic issues.

In the case of tuna fishery in Samoa, the "alia" catamaran is the main fishing craft. In mid-90s, the "alia" fleet had been expanded with the development of the export market for albacore tuna. Considering that the fishery had recorded high accidents involving 24 fatalities in 1996-1997, measures to improve sea safety were adopted that included legislation of small fishing vessels, mandatory safety requirements as part of licensing, statutory safety training for vessel crew, "big stick" enforcement, VHF network and 24-hour monitoring, sea safety consultative committee, and compilation and analysis of sea accident records. In a survey of 200 boats and 1000 fishers in 1998, safety records showed improvement in tuna fishery where the fatalities were down from 17 in 1997 to 0 in 2002.

Way Forward

Although the countries in Southeast Asia, South Asia and Pacific Island region have been implementing measures to improve the safety of fishing boats and fishers, there is still a need to generate political will in order that such efforts could be further enhanced. This would therefore call for the need to mainstream the safety issues into the national policies in order that safety at sea could be integrated in the overall fisheries management.

The collaborative effort of FAO, ILO and IMO had produced a number of guidelines that could be used in the advancement of safety at sea measures in the Southeast Asian region. Specifically, the STCW-F, together with the FAO/ILO/IMO Document for Guidance on Training and Certification of Fishing Vessel Personnel, could be used as reference and guide for the formulation of training programs for the crew and personnel of fishing boats in the Southeast Asian region. Gudmundsson (2010) summarized the collaborative effort of FAO with the International Labour Organization (ILO) and the International Maritime Organization (IMO) on the safety of fishing vessels and fishers, which led to the development of several standards on the safety for fishing vessels such as the Code of Safety for Fishers and Fishing Vessels, comprising Part A for the skippers and crew which contains provisions for operational and occupational requirements, and Part B for the shipbuilders and owners which specifies the requirements for the construction and equipment of fishing vessels 24 m in length and above as well as the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels, which applies for decked fishing vessels of 12 m in length and over but less than 24 m in length. The most recent FAO/ILO/IMO safety standard for fishing vessels is the Safety recommendations for decked fishing vessels of less than 12 m in length and undecked fishing vessels, the development of which is currently being finalized. Recent developments regarding international safety standards include the 1993 Torremolinos Protocol for fishing vessels of 24 m in length and above, and the International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F Convention).

During the Second Regional Technical Workshop in April 2010, the recommendations from the December 2003 Workshop were enhanced to come up with the over-all recommendations on Safety at Sea for Small Fishing Boats in the Southeast Asian Region (**Box 3**). Since these recommendations could be considered as the over-all framework, further formulation of appropriate programs on Safety at Sea by the Southeast Asian countries would be necessary. Thus, the issues and concerns on safety at sea would be included in the inputs for discussion during the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020: "Fish for the People 2020" in June 2011. In this regard, safety at sea should be incorporated in the new decade Resolution and Plan of Action that would be adopted during the Conference (**Box 4** and **Box 5**).

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