

# Could MCS Serve as a Tool in Achieving Sustainable Fisheries in Southeast Asia?

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**Monitoring, Control and Surveillance (MCS) was first defined by FAO in 1981, where Monitoring is the continuous requirement for the measurement of fishing effort characteristics and resource yields, Control is the regulatory conditions under which the exploitation of the resources can be conducted, and Surveillance is the degree and types of observations required to maintain compliance with regulatory controls imposed on fishing activities.**

The fisheries sector in the Southeast Asian region is generally characterized as multi-gear and multi-species and mostly small-scale. The contribution of small-scale fisheries to the total landing varies depending on the status of fisheries development in the respective countries. In Indonesia and the Philippines for example, the contribution of small-scale fisheries to their total fish landings is relatively higher than that of Thailand, where industrial fisheries have grown faster than in the other ASEAN countries. Small-scale fisheries, by and large, supply fish for local consumption, while most of the large-scale fisheries supply the export outlets. In this region, industrial fisheries were developed in addition to the traditional fisheries after 1960s, following the modernization of technologies. In general however, the region's major fishing sector in terms of number of people involved is still categorized as small-scale, coastal and subsistence fisheries. Although the specific structure differs from country to country, still a majority of the fisheries in the region can be categorized as non-industrial and small-scale traditional fisheries.

The rapid development of fisheries in the region has resulted in increased landings and exports in a relatively short period of time. This development, however, has also brought about over-exploitation of the coastal resources, which very often is followed by conflict among the resources users. To cope with such problems, governments of many countries strengthened their fisheries department by instituting fisheries management units. MCS is a component of fisheries management which has been promoted by many countries in the region in order to achieve sustainable fisheries.

## MCS and the Structure of Fisheries in the Southeast Asian Region

The 1993 clarification and amplification of the MCS definitions concluded in Ghana took note of the consequences of not including some of the activities in MCS. Thus, the revised definition of MCS (FAO, 2003) stated: '**Monitoring**' includes the collection, measurement and analysis of fishing

*activity including, but not limited to: catches, species composition, fishing effort, discards, area of operations, etc. This information is primary data that fisheries managers use to arrive at management decisions. If this information is unavailable, inaccurate or incomplete, managers will be handicapped in developing and implementing management measures. 'Control' involves the specification of the terms and conditions under which resources can be harvested. These specifications are normally contained in national fisheries legislation and other arrangements that might be nationally, sub-regionally, or regionally agreed. The legislation provides the basis for which fisheries management arrangements, via MCS are implemented. For maximum effect, legislation should be flexible (to cater for different and changing circumstances) and easily enforceable; and 'Surveillance' involves the checking and supervision of fishing activity to ensure that national legislation and terms, conditions of access, and management measures are observed. This activity is critical to ensure that resources are not over exploited, poaching is minimized and management arrangements are implemented.*

These latter FAO definitions and interpretations of MCS have been adopted in the Southeast Asian region, and to some extent adjusted and commonly used by fisheries personnel. Thus, the definition of MCS arising from the Southeast Asian context states that: **monitoring** is the collection, measurement and analysis of fishing and related activities, including - but no limited to - catch, species composition, fishing effort, by-catch, discards, areas of operation; **control** is the establishment of measures consisting of the specification of the terms and conditions under which resources can be harvested; and **surveillance** is the checking and supervision of fishing and related activities to ensure that national legislation and terms, conditions of access, and management measures are observed.

The people in the Southeast Asian Region have greatly and historically depended on fish for their diet. Therefore, fisheries can not be replaced by any alternate system to secure the protein requirements in food including livestock products. Fisheries in this region are typically tropical and exploiting a multitude of species, so that the methods to catch fish are in great number in terms of traditional fishing gears and practices, fish processing methodologies, and fish marketing systems that have traditionally and greatly diversified. Based on the regional fisheries structure, it is not simple to define such terms as coastal fisheries and industrial fisheries due to the different legal definitions applied by each country in the region. Nevertheless, for better understanding

in the absence of their definitions, the Fishing Zones and the Classifications of Small-scale Fisheries and Large-scale Fisheries in the Southeast Asian region are shown in **Box 1** and **Box 2**, respectively.

Implementation of MCS in the Southeast Asian Countries  
Among the Southeast Asian countries, Indonesia has the largest EEZ and numbers of fishers followed by Myanmar, Philippines and Vietnam (**Box 3**). However, the importance of the fisheries in the region is not directly related to numbers of fishers and size of EEZ as can be seen in Thailand, which has comparatively smaller EEZ (176,540 km<sup>2</sup>) than Indonesia's 2.9 million km<sup>2</sup> and Philippines' 0.3 km<sup>2</sup>. Thailand, which puts more effort in food security as well as promoting export including value-adding, had a total volume of fish production in 2006 at about 4.2 million mt, which was third after Indonesia's almost 7.0 million mt and Philippines' 4.4 million mt (**Table 1**). Much of Thailand's catch is from the fishing grounds outside the waters of Thailand, while Malaysia, Myanmar and the Philippines are still starting to fish further from their shores and building up larger offshore capacities. Considering that inland fisheries also play an important role in ensuring food security in many countries in the region, an MCS could also be designed for the region's inland fisheries sub-sector. In any case, countries in the region should take very cautious strides in expanding to offshore fisheries considering the increasing trend of fuel prices and the fact that there is no scientific evidence that more production could be derived from the deeper waters than the shallow areas (Kato, 2008).

### Cambodia

Fisheries management in Cambodia is the responsibility of its Fisheries Administration under the Ministry of

Agriculture, Forestry and Fisheries. MCS for the Cambodian marine and freshwater fisheries is an extremely difficult task to undertake due to more than two decades of war and concomitant anarchy. At the same time, many institutions have been involved in the management of the sector, legally and abusively, making it difficult for fishery planners and managers to perform their tasks well and to better arrange for community participation.

Since the local fishers are first and foremost the immediate beneficiaries of the fisheries resources, the participation of the local communities in planning, implementing, monitoring and evaluation is an absolute necessity in order to better strengthen MCS activities. The major constraints in the country's fisheries MCS include: (1) lack of qualified and skilled staff; (2) budgetary limitations for equipment and materials; (3) open access nature of the fisheries as it is very difficult to clearly separate small-scale from medium-scale in actual practice; and (4) lack of community participation and involvement in fishery conservation, protection and management.

### Indonesia

Basically Indonesia's MCS system has been established to comply with the new regime of EEZ waters under the jurisdiction of the country's coastal states, but in broader term, its MCS system is relevant to dealing with fisheries resources management as a whole. Indonesia has adopted the MCS system, and gradually the concept and its implementation has been improved, according to the country's capabilities in terms of institutional requirements, manpower, coordination, etc. Particularly in relation to surveillance and enforcement in Indonesia, there are a number of institutions involved that include its

**Box 1.** Fishing Zones of Countries in Southeast Asia

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

Source: SEAFDEC (2000 and 2003)

**Box 2. Classifications of Small-scale Fisheries and Large-scale Fisheries**

Countries	Small-scale Fisheries	Large-scale Fisheries
Brunei Darussalam	<i>Small-scale/Artisanal fisheries:</i> Operating in all Zones but concentrating in Zone 1	<i>Industrial Fisheries:</i> a) Trawlers less than 350HP operating in Zone 2 b) Purse seiners less than 20m LOA operating in Zone 2 c) Trawlers with 350-550HP operating in Zone 3 d) Purse seiners with 20-30m LOA operating in Zone 3 e) Purse seiners more than 30m LOA operation in Zone 4
Cambodia	<i>Coastal Fisheries:</i> Small-scale fisheries with/without engine (from 5 HP to 50HP) operating in Zone 1	<i>Commercial Fisheries:</i> Vessels more than 50 HP operating Zone 2
Indonesia	<i>Small-scale Fisheries:</i> a) Outboard engines <10 HP or <5GT operating in Zone 1. Trawls, purse seine and gill net are not allowed, except for purse seines with a head rope <120 m b) Inboard engines <50 HP or < 25 GT operation in Zone2. Trawl and purse seine are not allowed, except purse seine with a head rope <300 m.	<i>Industrial Fisheries:</i> a) Inboard engine < 200 HP or 100 GT operating in Zone 3, Purse seine is not allowed except those with a head rope < 600 m. b) All fishing boats and fishing gear operating in Zone 4
Malaysia	<i>Traditional Fisheries:</i> Small-scale fisheries using traditional fishing gears (i.e. other than trawls and purse seine) with boats less than 10 GT operating in all Zones concentration in Zone 1.	<i>Commercial Fisheries:</i> Medium and large scale fisheries using commercial fishing gears such as trawls and purse seines. a) With boats less than 40 GT operating in Zone 2. b) With boats from 40 GT to 70 GT operating in Zone 3. c) With boats above 70 GT operating in Zone 4.
Myanmar	<i>Coastal Fisheries:</i> Boats of less than 30 feet or using less than a 12 HP engine operating in Zone 1	<i>Industrial Fisheries:</i> Boats more than 30 feet long or using more than 12 HP engines operating in Zone 2
Philippines	<i>Municipal Fisheries:</i> Small-scale fisheries with boats of less than 3 GT that are allowed to operate in Zones 1 and 2	<i>Commercial Fisheries:</i> a) Small-scale commercial fisheries: from 3.1 to 20 GT boats operation in Zone 2; can also operate within 10.1 to 15 km (within Zone 1) if authority is granted by the concerned local government unit (LGU) b) Medium-scale commercial fisheries: from 20.1 to 150 GT operating in Zone 2; can also operate within 10.1 to 15 km (within Zone 1) if authority is granted by the concerned local government unit (LGU) c) Large-scale commercial fisheries: more than 150 GT operating in Zone 2.
Thailand	<i>Small-scale Fisheries:</i> With boats of less than 5GT operating in Zone 1	<i>Large-scale Fisheries:</i> With boats of more than 5 GT operating in Zone 2
Vietnam	<i>Small-scale Fisheries:</i> Boats with no engine and with engine but less than 40 HP	<i>Large-scale Fisheries:</i> Boats with engine more than 40 HP

Source: SEAFDEC (2000 and 2003)

**Box 3. Coastal and Marine Ecosystems of the Southeast Asian Countries**

Countries	Length of Coastline (km)	Area of Continental Shelf (km <sup>2</sup> )	Territorial Sea, up to 12 nm (km <sup>2</sup> )	Exclusive Economic Zone (km <sup>2</sup> )
Cambodia	1,127	34,646	19,918	55,000
Indonesia	95,181	1,847,707	3,205,695	2,914,978
Malaysia	9,323	335,914	152,367	198,173
Myanmar	14,708	216,379	154,778	358,495
Philippines	33,900	244,493	679,774	293,808
Thailand	7,066	185,351	75,876	176,540
Vietnam	11,409	352,420	158,569	237,800

Source: EarthTrends (2003)

Table 1. Total fish production of the Southeast Asian countries with production from capture fisheries

Countries/Production	2001	2002	2003	2004	2005	2006
Brunei Darussalam (Total)	1,696	2,215	2,386	3,136	3,108	3,100
Inland Capture Fisheries	1,578	2,044	2,221	2,417	2,390	2,390
Total Capture Fisheries	1,597	2,058	2,226	2,428	2,400	2,400
Cambodia (Total)	445,700	424,432	390,657	343,332	426,000	532,700
Inland Capture Fisheries	43,200	45,882	55,607	55,817	60,000	60,500
Total Capture Fisheries	428,200	406,182	364,357	305,817	384,000	482,500
Indonesia (Total)	5,354,134	5,516,206	5,920,373	6,121,296	6,828,020	6,989,033
Inland Capture Fisheries	3,967,145	4,074,066	4,383,158	4,321,805	4,406,559	4,468,010
Total Capture Fisheries	4,277,385	4,379,055	4,691,814	4,652,684	4,703,927	4,769,150
Lao PDR (Total)	81,000	93,156	94,700	94,700	107,800	107,800
Inland Capture Fisheries	31,000	33,440	29,800	29,800	29,800	29,800
Malaysia (Total)	1,415,834	1,463,625	1,483,324	1,542,071	1,424,097	1,498,732
Inland Capture Fisheries	1,235,367	1,276,185	1,287,336	1,335,725	1,213,681	1,296,250
Total Capture Fisheries	1,238,813	1,279,635	1,291,164	1,339,844	1,218,263	1,300,415
Myanmar (Total)	1,309,146	1,474,460	1,595,870	1,986,960	2,217,470	2,581,780
Inland Capture Fisheries	949,670	1,029,460	1,053,720	1,132,340	1,228,710	1,375,670
Total Capture Fisheries	1,187,880	1,284,340	1,343,860	1,586,600	1,732,250	2,006,790
Philippines (Total)	3,172,368	3,372,036	3,617,640	3,931,369	4,144,626	4,414,310
Inland Capture Fisheries	1,816,067	1,902,531	2,036,552	2,073,994	2,106,543	2,161,538
Total Capture Fisheries	1,951,912	2,033,642	2,169,136	2,214,341	2,248,778	2,322,036
Singapore (Total)	7,785	7,796	7,109	7,579	7,837	11,676
Total Capture Fisheries	3,342	2,769	2,085	2,173	1,920	3,103
Thailand (Total)	3,648,095	3,797,124	3,914,133	4,099,595	4,118,483	4,162,096
Inland Capture Fisheries	2,631,474	2,643,728	2,651,277	2,636,412	2,615,523	2,579,025
Total Capture Fisheries	2,833,974	2,842,428	2,849,724	2,839,612	2,814,270	2,776,295
Vietnam (Total)	2,332,856	2,530,639	2,823,607	3,108,105	3,397,200	3,647,627
Inland Capture Fisheries	1,481,175	1,575,640	1,647,233	1,733,434	1,791,100	1,816,100
Total Capture Fisheries	1,724,758	1,802,598	1,856,105	1,879,488	1,929,900	1,959,900

Source: FAO Fishstat Plus 2008

Directorate General of Fisheries, Navy, Department of Sea Communication, etc.

However, as MCS system is a new concept in Indonesian fisheries management, some teething problems have arisen, and as the legal aspects of the MCS system are not yet fully ready, thus hampering effective MCS implementation. Being a new concept, the MCS system is yet to be fully understood by most of the officials concerned and the stakeholders. Lack of trained staff capable of implementing this system as well as lack of facilities particularly at sea such as fisheries inspection vessels and operating budget, constrained the implementation of the MCS system in the country. So there is need to enhance the supporting components including staff, facilities and budget, and also introduce a systematic framework or mechanism for coordination in order to realize the objectives of the MCS system.

### Malaysia

The MCS system of Malaysia has come a long way from the basic need of fisheries management for territorial/coastal waters, and evolving to cope with new obligations and international concerns, especially those pertaining to management, conservation and utilization of fisheries resources in the EEZ. The MCS is mainly done by the Department of Fisheries (DOF) Malaysia, although other agencies are also involved, including the country's marine policy, navy, and to a certain extent some agencies under the Ministry of Science and Environment. The MCS program in Malaysia is relatively advanced compared to its neighboring countries. It embraces several activities, including those dealing with the collection of information on catches by vessels, which is an important data input for stock assessment, and which in turn provides support to the formulation of management measures. Furthermore, MCS operations also offer potential assistance in search and rescue operations for missing fishers or boats. MCS in Malaysia

was not conjured up overnight, but was mooted years back, while fisheries management and conservation measures were formulated and implemented. However, major structural changes were made and enhancements added to cope with the changing fishing industry itself, and also to accommodate the country's obligations under the United Nations Convention on the Law of the Sea (UNCLOS) and to reflect international concern. While continuous efforts have been made to improve MCS, Malaysia is certainly too enthusiastic to claim that its MCS system is now the most effective or efficient. However, the country also recognizes that much has yet to be done, especially in consolidating the effectiveness of MCS itself through the years. The various measures taken ostensibly under the auspices of MCS have to be looked at in a different light, in a more binding way, to allow the concept of MCS to mould these measures into a powerful integrated system, so that, together, it becomes a powerful tool in fisheries management.

### **Myanmar**

Fisheries in Myanmar could address the diversity in both marine and fresh water fisheries. In accordance with its MCS system, the Department of Fisheries (DOF) of Myanmar is mainly concerned with controlling the authorized operation of fishing vessels in Myanmar waters. It is the general view of its Fisheries Department that recently enacted laws are working satisfactorily, but also admitting that unauthorized fishing activities are still extensively practiced. Its fisheries legislation has been enacted and been adjusted in conformity with provisions of the UNCLOS specifically regarding the sharing of the surplus of fishery resources with neighboring states. However, the surveillance and control of vast areas of marine territorial waters is still difficult and violations of laws have sometimes been discovered. In its future action, the Fisheries Department is seeking external assistance for upgrading their MCS capabilities, improving education programs and developing aquaculture as an alternative to capture fisheries.

### **Philippines**

Over-fishing and illegal fishing are the major issues and threats in Philippine fisheries. The use of destructive fishing methods (i.e., dynamite, cyanide fishing and the use of fine mesh net fishing gear) has resulted in rapid habitat degradation and decline of the fishery stocks. The country's MCS system was designed to address these fisheries issues as well as other coastal and oceanic concerns. It was developed for the main purpose of providing a credible deterrence to violation of fishery laws and regulations, and preventing unlawful foreign and domestic fishing activities in Philippines waters. In addition, information on fishing effort, catches, vessel traffic, and such other related data could very well be used as basis for the formulation of national policies and laws, and in making strategic and tactical decisions regarding ocean planning and management,

including enforcement. The design of the country's MCS system has been completed and approved by the Secretary of the Department of Agriculture (DA) and endorsed by the President in 1995, for implementation under DA's leadership. However, despite initial implementation using external and some internal funds, the implementation of the whole system has advanced at a very slow pace. Currently, the activities are concentrated in the near shore areas. Offshore activities, particularly surveillance, rely heavily on assistance extended by the country's Department of National Defense (DND) until such time that the necessary equipment are purchased for this purpose. Moreover, the Philippines also has the most progressive programs for public awareness and introduction of participatory management for their coastal areas.

### **Thailand**

Basically, the coastal and marine fisheries in Thailand generate much more serious problems than inland fisheries. These problems include the depletion of fish stocks, over fishing, the use of destructive fishing gears, conflicts between many resource users, deterioration of coastal and marine environment, pollution, etc. Therefore the Department of Fisheries (DOF) of Thailand has to place more emphasis on coastal and marine fisheries. Key regulations are given high priority in coastal areas, which include the prohibition of fishing in the areas closed for three months during the spawning season of Indo-Pacific Mackerel in the Gulf of Thailand, and similarly the closed season in the Andaman Sea. The fisheries patrol boats have to patrol and monitor the 3 km line along the coasts of Thailand all year round in order to deter trawlers and push-netters from violating the regulation. The inshore area of the 3 km line is reserved for small-scale fisherman.

The areas closed for three months annually in the Gulf of Thailand during the spawning season of the Indo-Pacific Mackerel and in the Andaman Sea for other species require special attention. Some types of fishing gears are prohibited, such as otter-board and pair trawls, purse seines, and Chinese purse seine with mesh less than 4.7 cm. During the closed season, the DOF establishes a special task force to monitor and strictly enforce the law. Apart from using patrol boats, air craft are also used for MCS, in addition to the use of other technology and equipment such as radar, satellite system, etc. The DOF realizes that monitoring and surveillance are costly due to the large cost involved in acquiring patrol boats, purchasing fuel, hiring staff, etc. Therefore other measures have been sought to encourage the fisherman to comply with the fishery laws and regulations. These included campaigns aimed to increase the fishermen and public awareness by providing information regarding fisheries conservation and management, fisheries laws, regulations and enforcement to fishermen and their family members; establishing voluntary groups to help conserve fishery resources; and training student groups in

fisheries conservation and management. It is expected that these measures would help increase the awareness of all stakeholders regarding responsible fisheries.

### **Vietnam**

The marine resources of Vietnam are characterized by their multi-species nature, with small schools not concentrating in large exploitation areas and with clear variation. In addition, the characteristics of the resource distribution indicated that the bulk is concentrated in shallow waters, inshore from the 50 m depth contour. Due to such distribution characteristics of the fishery stocks in Vietnamese waters, fishing activities are concentrated in the 30 to 50 m depth zone, so that MCS of fishing activities in Vietnam is essentially inshore in nature. This led to the establishment of the country's Department of Protection of Marine Resources (DPMR) which operates in coastline localities. Equipped with small boats, its Sub-departments have proceeded with MCS of marine aquatic resources exploitation and legal enforcement. However, the capacity of the DPMR and its Sub-departments for protection remains too small compared with the required task. In particular, the boats available for patrol work are small and few, so control and inspection are constrained. Moreover, the attention to protect the resource along the coast is still very concentrated. Thus, there are near future plans and directions to manage their coastal fisheries through many measures such as continue coastal areas planning, continue research programs, strengthen the protection of fisheries resource in coastal areas, enhance people's knowledge and social/cultural life of fishing communities, improve fisheries law, strengthen monitoring and enforcement, etc.

### **MSC Focus on Combating IUU Fishing**

Illegal, Unreported and Unregulated (IUU) fishing can take place in all capture fisheries, whether within national jurisdiction or in the high seas. Efforts to conserve and manage fish stocks are undermined by IUU fishing and can lead to the collapse of a fishery or can seriously impair efforts to rebuild fish stocks that have already been depleted. This may lead to the loss of both short- and long-term social and economic opportunities, and could have negative impact on food security. Every country in the Southeast Asian region is always confronted by increasing pressure on their fisheries resources from illegal fishing. In many cases, IUU operation is more related to the lack of MSC management.

Nevertheless, countries in Southeast Asia should now focus on developing preventive measures in achieving sustainable fisheries rather than on the fisheries management that focuses on mitigating resource conflicts. Such measures could include regulating the number of fishing boats and overcapacity as well as an effective right-based fisheries

system. The IUU concept, with more focus on the I (illegal fishing), undermines national and regional efforts to conserve and manage fish stocks and, as a consequence, inhibits progress towards achieving the goals of long-term sustainability and responsibility as set forth in the Code of Conduct for Responsible Fisheries. Moreover, IUU fishing greatly disadvantages and discriminates those fishers that act responsibly, honestly and in accordance with the terms of their fishing authorizations. This is a compelling reason why IUU fishing must be dealt with expeditiously and in a transparent manner. If IUU fishing is not curbed, and if IUU fishers target vulnerable stocks that are subject to strict management controls or moratoria, efforts to rebuild those stocks to healthy levels will not be achieved. The regional plan of action (RPOA) to promote responsible fishing practices including combating IUU fishing in the region have already been drafted during the workshop held in Bali, Indonesia in March 2008 (**Box 4**).

### **Conclusion**

The problem of the coastal and marine fisheries in the region lies in the depletion of fish stocks, over fishing, conflicts between many resource users, ignorance, violations of laws and regulations by fishermen, etc. Certain countries are making strenuous efforts to improve their fisheries management and improve their MCS systems. Some are successful while some have failed, which might be due to the nature of the fishery resources being a common property, lack of strict implementation of limited entry policy and other policies, shortage of manpower and equipment to enforce the laws, lack of coordination between the government agencies concerned, etc. As in the case of Thailand, during the past decade the government has put more efforts into this effort by allocating more budget for MCS, but nevertheless there are still some fishermen violating the laws. Therefore, it can be understood that no MCS activities will be successful if there is absence in understanding and acceptance by the fishers of the rationale behind the MCS actions being implemented. Other measures are also needed to help increase compliance from the fishermen. Thus, in combination with MCS activities, such measures as establishing community-based fishery management, providing information to increase awareness among fishermen and their family members of fisher conservation and responsible fisheries, establishing voluntary groups, providing training programs for students, etc. are still necessary.

It is expected that these measures will help encourage fishermen to operate more responsibly in the long run. Eventually, MCS as defined under the Southeast Asian context could be one of the important fisheries management tools in order to achieve sustainable fisheries in the region.

**Box 4. Recommendations and plan of action to promote responsible fishing practices (March 2008 Bali Workshop)**

- Formalize a MCS sub-regional network,
- Identify and assess the key MCS gaps within the sub-region,
- Further explore processes to develop licensing, authorization and vessels ID for fishing and support vessels,
- Develop cooperative surveillance exercises,
- Develop sub-regional hot pursuit guild-lines,
- Coordinate and integrate all relevant national agencies in MCS activities,
- Focus on mechanisms to improve the collection and analysis of information on fishing vessels, catches, trans-boundary, market destinations of catches and operation nature and extent of all fishing activities, and
- Strengthen the institution and human capacity building across the region.

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