BOBP/REP/110

Report of the National Workshop on Monitoring, Control and Surveillance in Marine Fisheries

Bangladesh

7 - 8 June, 2008
Cox's Bazaar, Bangladesh

BAY OF BENGAL PROGRAMME **BOBP/REP/110**

Report of the National Workshop on Monitoring, Control and Surveillance in Marine Fisheries – *Bangladesh*

7- 8 June 2008
Cox's Bazaar, Bangladesh

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Prospectus

1.0 Background and Rationale

Fisheries and aquaculture play a vital role in the economy of Bangladesh. The sector contributes 5.43 percent to the Gross Domestic Product and is important in terms of food, trade and employment. The Bay of Bengal (BoB) is an integral part of the economy of Bangladesh. It is a valuable resource and large quantities of fish are harvested annually from the BoB. However, due to unsustainable fishing practices, the marine fish production is either stagnating or recording nominal growth. Many commercially important fish stocks are either fully exploited or over-exploited and are in need of recovery. Almost the entire small-scale/ artisanal fishery in the country operates in open access regime.

Fishing communities constitute a large population, which is mostly illiterate, poor and has limited access to electronic and print media and other channels of information. In view of their remote location, ignorance, illiteracy, lack of access to mass media, etc making them aware about the significance of responsible fishing and implementation of other management measures and conservation related issues is an enormous task. Provisions of the existing Fisheries Acts and Regulations are also not known to most of the fishing communities and as such compliance levels are very poor.

An effective and implementable legal framework is pre-requisite to management and conservation of fisheries resource. It also forms a major component of the control aspect in programmes related to Monitoring, Control and Surveillance (MCS). In January 2008, the four member-countries (Bangladesh, India, Maldives, Sri Lanka) of the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) organized a Regional Workshop on MCS (RW-MCS) in Chittagong, Bangladesh. One of the major outputs of the RW-MCS was the adoption of the 'Chittagong Resolution', which *inter alia* recommended that member-countries may undertake measures to formulate time-bound action plans for ensuring successful implementation and also strengthening of the national agencies responsible for MCS.

2.0 The Proposed Programme and its Justification

MCS in small-scale fisheries or in coastal areas presents a range of unique problems, which relate to large numbers of widely dispersed fishers operating within a fishery, mixed gear/ species and landing points. The main constraints, which impede practical application of MCS in Bangladesh, have been identified as follows:

- Lack of accurate statistics in the small-scale/ artisanal sector, which contributes about 95 percent of the total marine fish production of Bangladesh.
- Lack of a scientific information system.
- Inadequate trained manpower at both management and operational levels.
- Lack of awareness at the community-level of the need for MCS.
- A large number of inaccessible landing places along the coast.
- Lack of supporting legislation to implement MCS.
- Inadequate funding for MCS.

In view of the above, some of the main controls and instruments that could be used in implementing MCS in Bangladesh are:

(i) Determining the level of sustainable exploitation and other relevant information by data gathering, assessment and analysis;

(ii) Fishing effort control (through licensing);

(iii) Selecting appropriate management instruments - fishing areas/ locations/ duration of fishing (zonation);

(iv) Development of fisheries management plans based on the principles of conservation of fish stocks in a sustainable manner;

(v) Controls in ports and at sea;

(vi) Use of Vessel Monitoring System, wherever applicable;

(vii) Educating the community by dissemination of information;

(viii) Promoting co-management strategies;

(ix) Legal support for the fishery management plans and regulations to ensure the equitable allocation of resource; and

(x) Implementation of regulations through licensing, reporting and enforcement of fishery laws.

Another critical requirement for effective MCS is the establishment of a coordinating mechanism, with well-defined objectives and a clear work plan. The Government cannot practice MCS in isolation and, therefore, coordination among stakeholders is essential. In this regard, an important approach to MCS in such fisheries is, where possible, to foster a strong local awareness on the need for conservation and management. The setting up of MCS can also assist in establishment of multiple channels of communication, which can provide information to the fisher community on weather, commodity and market prices, safety aspects, hygiene, etc.

3.0 Objectives of the National Workshop

The main objective of implementing MCS is to secure responsible and sustainable management of fisheries resources in Bangladesh while allowing an ecologically safe and economically profitable exploitation of living marine resources in the interest not only of today's population but also for posterity. It is also expected to bring in a paradigm shift in the marine fisheries from open access to limited and controlled access regime. In essence, the proposed MCS will be the Government's response to challenges posed by the anarchism that prevails in the fishery.

The objectives of the National Workshop on MCS are as follows:

(i) Review of existing marine fisheries management programmes and analysis of the fisheries in the coastal waters and the Exclusive Economic Zone (EEZ). This will *inter alia* include the registration of fishing vessels, number and category of fishing craft and gear, fishing harbours/ fishing landing sites, boat building yards, etc.

(ii) Review of the existing fishing vessel licensing and registration procedures and practices, fisheries legislations and of other concerned Ministries/ Departments (*e.g.* the Mercantile Marine Department or MMD).

(iii) Assessment of the MCS capacity and identification of institutional development requirements within the Ministry of Fisheries and Livestock/ Department of Fisheries and, if necessary, other concerned sister Departments (*e.g.* MMD).

(iv) Preparation of an outline of procedures and practical application of fisheries MCS programmes (Action Plan).

4.0 National Workshop

The National Workshop will be organized by the Project Director, GoB-Danida Project on Strengthening of Institutional Capacity of DoF (GoB-Danida Agricultural Sector Programme II) in coordination with the BOBP-IGO.

Date and Venue

The National Workshop will be organized from **7-8 June 2008** at Hotel Shaibal, Cox's Bazaar, Bangladesh (Tel: +88 2 341 63274; Fax: +88 2 341 64202).

Conduct of the Workshop

The National Workshop will be largely conducted in Bangla Language.

Participation

Participants of the National Workshop shall include representatives from the (i) Ministry/ Department of Fisheries, (ii) Navy/ Coast Guard, (iii) Mercantile Marine Department, (iv) Representative of Fisher Groups/ Associations/ Boat Owners and the (v) BOBP-IGO and (vi) Experts.

Format of the Workshop

The National Workshop shall include four (4) presentations followed by Group Discussions and finalisation of an action plan for consideration of the Government of Bangladesh. Copies of the presentations shall be distributed to the participants prior to the Workshop.

Coordination of Workshop

The Project Director, GoB-Danida Project on Strengthening of Institutional Capacity of DoF (GoB-Danida Agricultural Sector Programme II) will coordinate the National Workshop arrangements with assistance from Director, BOBP-IGO.

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Patuakhali
Hatia
Chittagong
Sundarbans
Cox's Bazar
Bay of Bengal
Teknaf

Not to scale

Agenda and Timetable

	07 June 2008 ***(Saturday)***
0830 – 0900	Registration
0900 – 1020	Opening Session
1020 – 1100	*Tea/ Coffee Break & Group Photograph*
1100 – 1300	Technical Session I- Presentation of Technical Papers
1300 – 1400	*Lunch Break*
1400 – 1530	Technical Session II - Group Discussion
1530 – 1545	*Tea/ Coffee Break*
1545 – 1700	Technical Session II contd…
	08 June 2008 ***(Sunday)***
0900 – 1300	Technical Session III - Group Presentation and Preparation of draft Action Plan
1100 – 1115	*Tea/ Coffee Break*
1115 – 1300	Technical Session III contd…
1300 – 1400	*Lunch Break*
1400 – 1530	Concluding Session
1530 – 1600	*Tea/ Coffee Break*

GoB/DANIDA/BOBP-IGO National Workshop on
Monitoring, Control and Surveillance in Marine Fisheries – Bangladesh
Cox's Bazaar, Bangladesh, 7 – 8 June 2008

Programme

06 June 2008 (Friday)	***Arrival of the Participants***
07 June 2008 (Saturday)	***Day 1***
0830 - 0900	*Registration*
0900 - 1000	***Session I: Opening of the National Workshop***
0900 - 0905	Recitation from the Holy Quran
0905 - 0910	Welcome and Introductory Remarks: Mr Nasiruddin Md. Humayun, Project Director, Strengthening Institutional Capacity of DoF, GoB-Danida Agriculture Sector Programme Support II, Bangladesh.
0910 - 0915	Introductory Remarks by Special Guest: Mr Sajjadul Hassan, Deputy Commissioner, Cox's Bazaar District, Bangladesh.
0915- 0920	Address by Chief Guest: Mr Parikshit Datta Choudhury, Joint Secretary, Ministry of Fisheries and Livestock, Government of the People's Republic of Bangladesh.
0920 - 0930	Address by Chairperson: Mr Rafiqul Islam, Director General, Department of Fisheries, Ministry of Fisheries and Livestock, Government of the People's Republic of Bangladesh.
0930 - 1015	Keynote Address: Monitoring, Control and Surveillance in Small-scale Fisheries: Guiding Principles and Practices by Dr Yugraj Singh Yadava, Director, BOBP-IGO.
1015 - 1020	Vote of Thanks - Mr Md Kabir Ahmed, District Fisheries Office, Cox's Bazaar, Bangladesh
1020 - 1100	*Group Photograph; Tea/ Coffee*
1100- 1300	***Session II: Technical Presentations***
1100 - 1140	Overview of the Monitoring, Control and Surveillance in Fisheries in South-east Asia– Mr Bundit Chokesanguan, Director (Training) SEAFDEC, Bangkok.
1140 - 1220	The Status of Coastal and Marine Fishing Fleet in Bangladesh and its Preparedness for a Monitoring, Control and Surveillance Regime – Dr Giasuddin Khan, Senior Fisheries Specialist, WorldFish Center, Dhaka, Bangladesh.
1220 - 1300	Legal Support to Implement Monitoring, Control and Surveillance in Marine Fisheries Sector in Bangladesh: Present Status and Gaps to be Addressed – Commander Afazur Rahman Chowdhury, Deputy Director (Plans), Coast Guard HQ, Dhaka, Bangladesh.

1300 - 1400	*Lunch*
1400 - 1530	***Session III - Group Discussion***
1400 - 1415	Formation of Groups/ Orientation
1415 - 1530	Groups Discussions
1530 - 1545	*Tea/ Coffee*
1545 - 1700	Group Discussions contd…
08 June 2008 (Sunday)	***Day 2***
0900 - 1300	***Session III: Group Presentations & Preparation of Draft Action Plan***
0900 - 1100	Group Presentations
1100 - 1115	*Tea/ Coffee*
1115 - 1300	Preparation of Draft Action Plan
1300 - 1400	*Lunch*
1400 - 1530	***Session IV: Concluding Session***
1400 - 1515	Presentation of Draft Action Plan and its Adoption
1515- 1525	Concluding Remarks: Chairperson
1525 - 1530	Vote of Thanks: Mr Nasiruddin Md. Humayun, Project Director, Strengthening Institutional Capacity of DoF.
1530 - 1600	*Tea/ Coffee*
1600 hrs onwards	***Participants Departure***

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Report

1.0 A National Workshop on Monitoring, Control and Surveillance in Marine Fisheries in Bangladesh (NW-MCS) was organized by the Strengthening Institutional Capacity of DoF Project ASPS II:DoF-Danida in coordination with the Ministry of Fisheries and Livestock (MoFL), Government of Bangladesh and the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO). The NW-MCS was held in Motel Shaibal, Cox's Bazaar, Bangladesh from 7-8 June 2008. Fifty-one participants representing 21 national, regional and international fisheries organizations attended the NW-MCS.

2.0 The NW-MCS began with the recitation from the Holy Quran. Mr Nasiruddin Md Humayun, Project Director, Strengthening Institutional Capacity of DoF Project. ASPS II:DoF-Danida welcomed the guests and participants. Mr Humayun said that it was his pleasure and privilege to participate in the DoF/ DANIDA/ BOBP-IGO National Workshop on Monitoring, Control and Surveillance in Marine Fisheries in Bangladesh. Describing the current crisis in global fisheries, to which Bangladesh was no exception, Mr Humayun said that the growing demand of fish and fish products had contributed to overexploitation and depletion of fish stocks in many parts of the world. This situation was more serious in the marine sector due to open access nature of fisheries. This situation was further compounded by habitat destruction, industrial pollution and other effluents and wastes dumped into the marine waters, which affected the livelihoods of fishers.

"The emerging problems in the fisheries sector have been addressed by regulating the numbers of industrial trawlers and limiting their areas of operation; introducing regulations on gear restrictions, closed areas and closed seasons for artisanal and mechanized fishing vessels; and also bringing the small-scale fishing operations under registration and licensing system", said Mr Humayun. He said that in order to enforce the provisions of the National Fisheries Strategy, 2006, it was necessary to review and strengthen the Monitoring, Control and Surveillance (MCS) capabilities of Bangladesh. He suggested that enforcement through rules and regulations coupled with self-regulation within the framework of co-management would be an ideal approach. To address the new challenges of MCS, strengthening of institutional capabilities in government, industry and at community levels would be a pre-requisite.

Mr Humayun said that the NW- MCS was an important step towards formulating a National Plan of Action for strengthening MCS in the marine and coastal waters of Bangladesh and was being organized at the most opportune time. He was happy to note that participants representing 21 national, regional and international organizations were present at the Workshop and hoped that their active participation, constructive criticism and valuable contributions would help in establishing an appropriate mechanism for managing the marine fisheries resources of Bangladesh within the framework of MCS.

In conclusion, Mr Humayun reiterated his thanks and gratitude to the chief guest, Mr Parikshit Datta Choudhury, Joint Secretary, MoFL and to the chairperson, Mr Md. Rafiqul Islam, Director General, Department of Fisheries (DoF) for having agreed to participate in the National Workshop and for their support in preparation of the Workshop. He also thanked

Dr Yugraj Singh Yadava, Director, BOBP-IGO for providing technical and financial assistance for organizing the Workshop; to the Royal Danish Embassy, Bangladesh for providing financial support and cooperation in holding the Workshop and to Mr Bundit Chokesanguan, Director (Training), SEAFDEC for having agreed to participate in the Workshop as an Expert.

3.0 Mr Sajjadul Hasan, Deputy Commissioner, Cox's Bazaar District, Bangladesh and Special Guest thanked the organizers for inviting him to the Workshop and for organizing the Workshop in Cox's Bazaar. He said that the potential of marine fisheries in Bangladesh was huge and effective management measures were required to tap the resources in a sustainable manner. "While doing so, the occupational hazards faced by the fishers need to be minimized", said Mr Hasan. In conclusion, Mr Hassan said that the action plan that would emerge from this Workshop would guide the government in implementation of MCS in Bangladesh.

4.0 The Chief Guest, Mr Parikshit Datta Choudhury, Joint Secretary (Fisheries), MoFL, Government of Bangladesh in his opening remarks said that the need for an effective MCS programme had arisen to strike a balance between conservation and sustainable exploitation. MCS activities in the fisheries sector in Bangladesh were most neglected. Mr Choudhury said that the proposed action plan should be based on the 'Chittagong Resolution' adopted by the BOBP-IGO member-countries in January this year. In conclusion he thanked the Strengthening Institutional Capacity of DoF Project, BOBP-IGO, the Royal Danish Embassy and Mr Bundit Chokesanguan for their support in organizing the National Workshop and declared the Workshop open.

5.0 At the outset, Mr Md. Rafiqul Islam, Director General, DoF and chairperson of the NW-MCS extended a warm welcome to all the participants attending the NW-MCS. Mr Islam said that fisheries and aquaculture play a vital role in the economy of Bangladesh. He said that the Bay of Bengal was an integral part of Bangladesh and the marine resources comprised 9 060 sq km of territorial waters and 1 40 860 sq km of Exclusive Economic Zone (EEZ). The coastal areas of the country were blessed with rich mangrove forests, which included the World Heritage Site 'the Sunderbans'. The numerous rivers that drained into the Bay, the mangrove forests and the long continental shelf have made the marine waters fertile with a rich biodiversity comprising 475 species of fin-fishes, 36 species of shrimps, 12 species of crabs, 5 species of lobsters, 6 species of oysters, 301 species of mussels, 33 species of sea cucumbers, 11 species of dolphins/ whales, 4 species of turtles, 56 species of sea weeds and other valuable resources. Marine fisheries contributed about 21 percent to the total fish catch of the country and about 1 percent to the national GDP. Further, millions of people were directly or indirectly dependent for their livelihoods on this sector.

Mr Islam said that presently the capture fisheries in Bangladesh were stagnating, although the resources provided good potential for augmenting the catch. Reasons for this stagnation were lack of reliable database, over-exploitation of some stocks and under-exploitation of others, inadequate MCS, impact of global warming and climate change, etc. In this regard he suggested that the EEZ of Bangladesh should be demarcated; BOBP-IGO should consider including countries on the eastern side of the Bay as members of the Organisation and also have staff from all member-countries; a strong networking should be established amongst member-countries for exchange of information, including weather forecast; a central data base should be established for recording information relating to fauna and flora; a strong MCS system should be established; management plans should be formulated for shared stocks;

marine parks should be set up; joint stock survey programmes should be undertaken; common funds should be raised for safety at sea; nursery grounds should be protected and catching of juveniles of fin and shellfish species should be prohibited.

Concluding his address, Mr Islam said that activities related to management framework and MCS were included in the Marine Fisheries Capacity Building Project of the DoF and this National Workshop would provide suitable directions and an action plan to carry forward the MCS programme for bringing improvements in the marine and coastal fisheries of Bangladesh.

6.0 Dr Yugraj Singh Yadava made the keynote presentation on 'Monitoring, Control and Surveillance in Small-scale Fisheries - Guiding Principles and Practices'. Dr Yadava said that the fisheries sector occupies a unique status in the national economy, socio-cultural setting, rural employment and food and nutritional security of Bangladesh. It is estimated that about 1.77 million fishers are engaged in the primary sector and 67 300 in the secondary sector. The sector contributes significantly to the national GDP and also to the export earnings.

Dr Yadava said that marine fish production in Bangladesh increased from 95 000 metric tonnes (mt) in 1975-76 to 294 000 mt in 1996-97. During 2001-02, the marine catch was estimated at 415 420 mt, showing an increase of about 52 percent. In 2005-06, the catch was estimated at 479 810 mts, registering a slower growth rate as compared to the previous periods. Marine fisheries contribute about 20 per cent of the total fish production of the country. In 2005-06, the small-scale or artisanal fishing contributed about 93 percent of the total marine production of the country and the remaining 7 percent was contributed by the industrial fleet. The major fishing gear employed in the estuaries and coastal areas are the gill net, set bag net, trammel net, long line and beach seine. The set bag net, an important gear in the coastal waters, consists of Estuarine Set Bag Net (ESBN) and Marine Set Bag Net (MSBN).

Estimates from various reports show that there are about 45 500 artisanal boats, of which 35 000 are non-mechanised and the remaining 10 500 mechanised, including 2 824 licensed from the Marine Fisheries Office and some 6 200 registered with the Mercantile Marine Department (MMD). Mechanised boats generally vary in length from 5m to 15m and operate with 22-60 hp engines and a crew of 14-18. Besides, there are large fishing trawlers, licensed by the Government. While the Marine Fisheries Ordinance has reserved areas up to 40-meter depth for the artisanal fisheries, but many trawlers are fishing within this depth zone.

Describing the major issues in marine fisheries sector in Bangladesh, Dr Yadava said that the coastal marine fishery portrays a picture of unregulated access, overcapacity and low catches per unit effort and fishing rights conflicts. In most cases, the entire community relies on fishing as its chief source of livelihood, lacking alternative means of livelihood. A large proportion of fish stocks - both marine and inland are fully exploited, over-exploited, depleted or in need of recovery. Except the commercial trawl fishery, which is regulated to a certain extent, the small-scale/ artisanal fishery is almost unregulated.

License for fishing in marine waters is given by the DoF while the MMD has the authority to register the boats. Fishing license is given only to registered boats. Currently, about 10 per cent of the mechanized boats are only registered. Unlike the Forestry Department, the DoF does not have the magisterial power and fisheries personnel depend on the executive and the police departments for enforcement of the provisions under the Fisheries Acts. The fishing vessel registration is one of the principal bottlenecks in extending the licensing mechanism of the Marine Fisheries Office of the DoF. If the entire fishing fleet cannot be brought under the licensing mechanism of the DoF, monitoring their activities will be a far cry. The MMD is

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also ill equipped to enforce its existing legislation, as there are only two offices of the MMD all along the coast. The Bangladesh Coast Guard has been set up under the Coast Guard Act, 1994 and has the mandate to *inter alia* protect the national interests in the maritime zones of Bangladesh, prevent illegal fishing in the maritime areas and patrol in the maritime zones. However, the Coast Guard is ill equipped to handle the situation and needs considerable strengthening in terms of manpower and equipment, including patrol boats and other paraphernalia.

Small-scale fishing communities constitute a large population, which is mostly illiterate, poorest of the poor and has limited access to electronic media and other channels of information. Provisions of the existing Fisheries Acts and Regulations are also not known to most of the fishing communities and as such compliance level is very poor. Bangladesh has a number of different fishery management situations; these range from the local, specific stock and specific fishery of perhaps a few tonnes to a number of different trawl fisheries, and then a largely under-exploited offshore fishery. An effective and implementable legal framework is pre-requisite to management and conservation of fisheries resource. It also forms a major component of the control aspect in programmes related to MCS.

The main constraints, which impede practical application of MCS in Bangladesh, have been identified as lack of accurate statistics in the small-scale fisheries sector, which contributes 93 per cent of the total marine fish production; lack of a scientific information system; inadequate trained manpower at both management and operational levels; lack of awareness at the community-level of the need for MCS; large number of inaccessible landing places along the coast; lack of supporting legislation to implement MCS; multiplicity of agencies and lack of well-defined roles and jurisdictions; and inadequate funding for MCS.

Dr Yadava said that legislative measures may be appropriate for sophisticated commercial fisheries, but generally in the case of artisanal/ small-scale fisheries in Bangladesh it may be important to reduce the need for conventional surveillance. An important approach to MCS in such fisheries is, where possible, to foster a strong local awareness on the need for conservation and management. Another critical requirement for effective MCS is the establishment of a coordinating mechanism, with well-defined objectives and a clear work plan. MCS cannot be practiced in isolation by the Government and, therefore, coordination among stakeholders is essential.

Referring to the 'Chittagong Resolution' Dr Yadava said that In January 2008, the four member-countries (Bangladesh, India, Maldives, Sri Lanka) of the BOBP-IGO along with experts met in Chittagong, Bangladesh to discuss implementation of the MCS within their national jurisdictions as also on a regional basis and at the end of the three-day's Workshop agreed on a common agenda. This agenda, termed as 'Chittagong Resolution' *inter alia* recommended that the 'member-countries undertake measures to formulate time-bound action plans for successful implementation of MCS and for strengthening the national agencies responsible for MCS'. Keeping in view the 'Chittagong Resolution', one of the objectives of this NW-MCS is also to formulate an 'action plan', which can guide the development of MCS in Bangladesh.

Concluding his presentation, Dr Yadava said that the main objective of implementing MCS in Bangladesh should be to secure responsible and sustainable management of fisheries resources while allowing an ecologically safe and economically profitable exploitation of living marine resources in the interest not only of today's population but also for posterity.

The objective should also aim at bringing in a paradigm shift in the marine fisheries sector from open access to limited and controlled access regime and wherever possible allocating rights to the user groups. He further said that the small-scale fisheries sector can get immediate benefit from a successful MCS measures through (i) effective demarcation of fishing areas, (ii) better insurance deal from data strengthening, (iii) target fishing through resource mapping, (iv) sea-safety, (v) reflecting their stakes in fishing policy, (vi) stabilization of catch per boat hence income and (vii) possible jobs in land and sea-based monitoring systems. Implementation of MCS will also be a step forward in the fulfillment of the requirements of the Code of Conduct for Responsible Fisheries by Bangladesh. "Community motivation is the most important step for successful implementation of a MCS policy for small-scale fisheries. Sustainability or availability of fish for generations to come offers little or no incentive to artisanal fishers as they earn and live by the day. Promoting MCS as a business-strengthening package could be more appealing and effective in community mobilization for successful implementation of MCS in Bangladesh", said Dr Yadava.

7.0 At the conclusion of the Opening Session of the National Workshop, Mr Md. Kabir Ahmed, District Fisheries Officer, Cox's Bazaar proposed the vote of thanks. He said that the marine fisheries sector lacked skilled manpower to implement MCS activities. "After a long time the government has realized the need for proper management of the marine fisheries sector and for this development of manpower is essential. It is hoped that the NW-MCS will emerge with valuable suggestions and recommendations, which can be practically implemented", said Mr Ahmed. He was also hopeful that the marine resources would save the people from hunger in future. He thanked the guests for their participation in the Opening Session of the National Workshop.

8.0 In Session II (Technical Presentations), the first presentation was made by Mr Bundit Chokesanguan, Director (Training), Training Department, Southeast Asian Fisheries Development Center (SEAFDEC), Thailand on 'Overview of the Monitoring, Control and Surveillance of Fisheries in Southeast Asia'. Mr Bundit said that small-scale fisheries were dominant in the Southeast Asian region, but their contributions to the total fish landings varied depending on the status of fisheries development in the respective countries. In Indonesia and in the Philippines, the contribution of small-scale fisheries to the total fish landings was relatively higher than in Thailand, where industrial fisheries had grown faster. "Small-scale fisheries, by and large, supply fish for local consumption, while large-scale fisheries contribute mainly to the export sector. However, going by the number of people engaged in the fisheries, the sector can be categorized as small-scale, coastal and subsistence fisheries", said Mr Bundit.

Describing the development of fisheries in the Southeast Asian Region, Mr Bundit said that although the rapid development resulted in increased landings and exports in a relatively shorter period of time, but the fast growth also contributed to over-exploitation of the coastal resources, followed by conflict among resource users. To cope with such problems, the governments of many countries strengthened their fisheries departments by instituting fisheries management units. Simultaneously, MCS as an important component of fisheries management was also promoted to achieve sustainable fisheries. He further said that in Southeast Asian countries the commonly used definition of MCS was as follows:

> **monitoring** – collection, measurement and analysis of fishing and related activities, including - but not limited to – catch, species composition, fishing effort, by-catch, discards, areas of operation.

control – establishment of measures consisting of the specification of the terms and conditions under which resources can be harvested.

surveillance – the checking and supervision of fishing and related activities to ensure that national legislation and terms and conditions of access and management measures are observed.

Mr Bundit further elaborated on the classifications of small-scale fisheries and large-scale fisheries in the Southeast Asian region and also presented an overview of the different fishing zones practiced in the different countries in the region. Explaining the status of MCS in the region, he said that the MCS system of Malaysia was the most developed and had come a long way to meet the basic needs of fisheries management for territorial/ coastal waters of that country. The system had gradually evolved to cope with new obligations and international concerns, especially those pertaining to management, conservation and utilization of fisheries resources in the EEZ.

"Every coastal state in Southeast Asia is facing increasing pressure on their fisheries resources from Illegal, Unreported and Unregulated (IUU) fishing. In many cases, IUU operations rely heavily on the lack of MSC management. IUU 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 (CCRF). 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 such stocks to healthy levels will not be achieved", said Mr Bundit. He further informed that the Regional Plan of Action (RPOA) to Promote Responsible Fishing Practices including combating IUU Fishing in the Region had already been drafted by the Southeast Asian countries and in a workshop held in Bali, Indonesia from 4 to 6 March 2008, the following recommendations were made:

- Formalize a MCS sub-regional network,
- Identify and assess 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 guidelines,
- 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 nature of operation and extent of all fishing activities, and
- Strengthen the institutional and human capacity building across the region.

Concluding his presentation, Mr Bundit said that depletion of fish stocks, over fishing, conflicts between resource users, ignorance, violations of laws and regulations by fishermen were some of the main problems of the coastal and marine fisheries in the region. "In their efforts to improve fisheries management and establish MCS systems, some countries have been successful while others have failed. The failures might have been due to the common property nature of the fishery resources, lack of strict implementation of policies and programmes on MCS, shortage of manpower and equipment to enforce the laws, lack of coordination between

government agencies concerned, etc", said Mr Bundit. He further said that MCS programmes would not be successful if there was lack of understanding and acceptance of MCS. "To promote increased levels of compliance by fishers, inclusion of community-based fishery management, increased awareness among fishers and their families on conservation and adoption of responsible fisheries, establishing voluntary groups, providing training programs for students, etc. could help encourage fishers to operate more responsibly in the long run, and can make the MCS system become more effective", said Mr Bundit.

9.0 Dr Md. Giasuddin Khan, Senior Fisheries Specialist, The WorldFish Center, Dhaka made the next presentation on 'The Status of Coastal and Marine Fishing Fleet in Bangladesh and Preparedness for a Monitoring Control and Surveillance Regime'. He said that the coastal and marine fishers of Bangladesh landed around half a million tonnes of fish a year involving about one million people operating an estimated 22 500 non-mechanized and 21 400 mechanized fishing boats. Besides, a significant industrial trawler fleet also operated targeting shrimp and finfish on the continental shelf. This production was about 22 percent of the national fish production.

Dr Khan said that of the total marine fish production about 90 percent was landed by small-scale artisanal fishers. In Bangladesh, management of coastal fisheries primarily focused on industrial trawler fleets, with limited attention being paid to other fisher groups. This situation had led to uncontrolled expansion of fishing effort in the small-scale sector, leading to the present crisis of excess fishing fleet and over-exploitation of the resources. "The coastal fisheries resources have been over-exploited due to irrational and uncontrolled expansion of the fishing fleet and as a result the fish stocks have declined. Artisanal fishing has already become non-remunerative. A short study undertaken by The WorldFish Center on the request of the Government of Bangladesh has not only confirmed that the fish stocks are continuously declining, it has rather emphasized that the rate of decline has been faster during the last few years. The report added that if unchecked, it is highly likely that recruitment of many key commercial species will collapse, having a substantial impact on all coastal fisheries and the livelihoods and food security", said Dr Khan.

The strong commitment of the Government to promote sustainable marine fisheries development is reflected in the 'Marine Fisheries Sector Sub-strategy' produced as a part of a larger 'National Fisheries Strategy and Action Plan', said Dr Khan. He further said that presently the powers of coastal fisheries management were delegated to the District Fisheries Officers (DFOs) of the coastal districts. But in absence of technically competent staff at district and upazilla levels, the system was not working well. Therefore, provisions for reorganizing and strengthening of the marine wing of the DoF at the district and upazila levels were included in the 'Marine Fisheries Sector Sub-strategy'.

Describing the issues of immediate concern, Dr Khan said that the catches of adult penaeid shrimps as brood stock for the coastal aquaculture industry had declined in terms of CPUE (50% reduction since 1987) and size (22% reduction over the past five years). This had resulted in the trawl industry expanding its operations into inshore waters (*i.e.* from the 40 meter depth contour to as shallow as 20 meter depth) to maintain catches. "Over the last 20 years there has been a big shift in the composition of catches of the finfish trawlers. Catches during 1984 -1986 showed that the major commercial species were white grunters, croakers, catfish, breams, snappers and hair tails. Since 2005 -2006 these have mostly been replaced by low valued species like acetes shrimp, crab juveniles and Bombay duck. The declining CPUE (650 kg/ day/ boat in 2001-2002 to under 100 kg/ day/ boat in 2005-2006) from small

mesh gillnet vessels targeting hilsa, skipjack tuna and mackerel is alarming. In addition, the biodiversity has also declined. During the 1984-1986 surveys, there were 20 species contributing to the main landings, whilst in 2005-2006 this has declined to 12 species. This indicates that the more valuable and longer-lived species are being fished out and replaced by smaller, short-lived pelagic fish species", said Dr. Khan. He further added that marine capture fisheries must be conducted in a manner that does not lead to over-fishing. The destructive fisheries must be phased out and replaced by eco-friendly and economically feasible methods. In one study it was shown that the effort should be reduced by at least 50 percent. Such management plans, using precautionary approaches, should be implemented where ever necessary.

Dr Khan said that considerable support and developmental thrust needs to be given to marine catch monitoring. Regular flow of information on fish landings, including basic biological parameters (*e.g.* fish length frequency distribution) and on discards will be essential. Development of local reporting systems, especially for artisanal fisheries, developed through co-management structures and mechanisms would also be useful and cost-effective. He said that mechanisms should be instituted to ensure proper selectivity of fishing gear and fishing operations, minimization of wastes and discards, reduction in catch of non-target species and its impacts on associated or dependent species. Dr Khan also recommended that registration of all mechanized boats should be completed as a matter of urgency; given the limited capacity to mount sea-borne inspection, efforts should be focused on land-based inspection and specific ports should be designated for landing and berthing of larger vessels,

Dr Khan said that since the artisanal fleet was widely dispersed and difficult to monitor and control, the limited inspection capacity of the DoF should be improved and bolstered through community-level policing, possibly through co-management structures. In this regard he recommended that capacity-building would be important, together with developing awareness and understanding, consensus and promoting peer-pressure mechanisms. "Decision-making in fisheries management should be supported by sound scientific information. Where this information is lacking, precautionary measures should be developed and subsequently refined through targeted research. Whilst the precautionary principle suggests a conservative approach to fisheries management in the absence of scientific information, targeted research should be conducted to ratify and refine decision-making as further information becomes available", said Dr Khan.

On the Marine Fisheries Policy, Dr Khan said that it needed revision to reflect both the precautionary approach as well as the ecosystem approach that recognizes that fisheries will impact the structure, function and biological diversity of the wider ecosystem (and *vice versa*). He said that the other policy areas that needed greater emphasis included minimizing inter-sectoral conflicts and the development of co-management and community-based fisheries management and other approaches to reduce the vulnerability of small-scale fishers. In conclusion he said that recommendations for precautionary management were provided in the WorldFish Report made to the Government (Huntington et. al, 2007) and they should be considered for implementation.

10.0 Commander Afazur Rahman Chowdhury of the Bangladesh Coast Guard (BCG) made a presentation on 'Present Status of Legal Support to Implement Monitoring, Control and Surveillance in Marine Fisheries Sector in Bangladesh'. He said that the rapid depletion of key fish stocks in the 1980s and 1990s had made it imperative for the Government to assume greater control over fishing activities. Mr Chowdhury said that it was apparent from

the definition of MCS that law was central to its implementation. In this regard he first presented an overview of international laws such as the 1982 United Nations Convention on the Law of the Sea (UNCLOS III), FAO Compliance Agreement and the 1995 UN Fish Stocks Agreement, which have bearing on MCS. He also discussed the 1995 FAO CCRF and said that the CCRF *inter alia* served as an instrument of reference to help States to establish or to improve the legal and institutional framework required for the exercise of responsible fisheries and in the formulation and implementation of appropriate measures.

On the present status of laws supporting MCS in Bangladesh, Mr Chowdhury said that a good number of legislative instruments were in force in Bangladesh which supported MCS directly or indirectly. These were Ordinances, Acts and Rules administered by various ministries. The Acts and Rules included the Protection and Conservation of Fish Act, 1950 (East Bengal Act 18 of 1950); the Marine Fisheries Ordinance, 1983 and the Marine Fisheries Rules, 1983 (as amended in 1993). The Marine Fisheries Ordinance, 1983 was the base law and regulatory instrument for marine fisheries in Bangladesh. It covered territorial waters and economic zone of Bangladesh as declared by the Government under the Territorial Waters and Maritime Zones Act, 1974 and any other marine waters over which it has, or claims to have jurisdiction under law with respect to the management, conservation and development of the marine living resources. This law authorized the Government to specify the types, classes and number of fishing vessels that could be deployed in Bangladesh waters having regard to the requirements of fisheries management and development plans. It regulated the issuance and conditions of fishing licenses for national and foreign fishing vessels, determined license conditions and allowed fishing gear, mesh size, etc.

Mr Chowdhury also gave details of the Acts/ Rules of the other Ministries/ Departments having bearing on MCS in Bangladesh. These included the Environmental Conservation Act 1995; Forest Act 1927; Rules to Regulate Hunting, Shooting, and Fishing within the Controlled and Vested Forests, 1959; Territorial Waters and Maritime Zones Act, 1974 and Territorial Waters and Maritime Zones Rules, 1977; The Bangladesh Merchant Shipping Ordinance, 1983; Bangladesh Code of Conduct for Responsible Fishing and the Bangladesh Coastal Zone Policy, 2005,

On the issue of constraints, limitations and gaps, Commandant Chowdhury said that the primary weakness of MCS in Bangladesh was the difficulties in implementation of existing legislations and management measures. Marine Fisheries Ordinance, 1983 and the Rules made under the Ordinance were comprehensive enough to achieve a reasonable standard of MCS in the marine fisheries sector. However, marine fisheries legislations have been generally implemented for the industrial fishing trawlers. In the artisanal sector such legislation and management measures faced severe challenges in implementation. The prevailing socio-economic conditions and lack of awareness might be the primary cause for the situation, but issues such as non-implementation of the law, failure to act responsibly by the stake holders, interference of pressure groups and lack of trained manpower in marine fisheries sector, etc could not be ignored either. The BCG entrusted with fishery protection duty also faces constraints in resources and manpower. “The BCG needs proper surface platforms and surveillance aircraft for carrying out its fishery protection duties effectively. There is also a need for better coordination and understanding among concerned ministries and departments, especially when formulating legislative instruments. A participatory approach will also help improve the situation”, said Commander Chowdhury.

Although industrial fishing trawlers were licenced (except the 31 on-trial trawlers under court order), in the small-scale sector only 15-20 percent of the fleet was registered/ licensed. As per the requirements of the Marine Fisheries Ordnance, 1983, the licence fee for mechanized boats was doubled, which further discouraged the poor boat owners to register their boats and obtain fishing licence. The need for annual renewal also added to their fear of possible harassment. Commander Chowdhury suggested that a nominal fee along with awareness build up might solve this problem. "To make MCS effective, the use of modern technologies such as satellite based Vessel Monitoring System (VMS) must be considered. However, to accomplish this, the laws should have enabling provisions. Further, the law should also provide necessary provisions for clear marking of fishing boats", said Commander Chowdhury.

11.0 In Session III (Group Discussion) of the National Workshop, participants were divided into four groups to discuss the following four themes. The details of the topics discussed under each theme are enclosed as *Annex 1*.

Group I: Registration and Licensing of Fishing Boats, Demarcation of Zones, Colour Coding, Communication and Surveillance Infrastructure.

Group II: Estimation of Fishing Capacity, Maximum Sustainable Yield and Optimization of Fishing Fleet.

Group III: Governance, Policy and Legislative Support to MCS.

Group IV: Institutions, Human Resource Development and Role of Non-Governmental and Community-Based Organizations.

12.0 Each Group was assisted by a facilitator who also moderated the discussions. The Group-wise list of participants is placed as *Annex 2*. At the end of the first day all the four Groups completed their discussions, which were summarized in the form of a matrix. The summarized matrix of the recommendations made by the four Groups is presented as *Annex 3***.**

13.0 Mr Md Nasiruddin Sada made the presentation on behalf of Group I and covered issues such as registration and licensing of fishing boats, demarcation of zones, colour coding, communication and surveillance infrastructure. The Group recommended that there should be a one stop service point for registration and licensing of fishing vessels; the capacity of the MMD should be strengthened to undertake inspection and registration of fishing vessels; and fishing zones for different categories of fishing vessels should be demarcated. In this regard the Group suggested that no-fishing zone should be declared up to 5 meter/ 3 nautical mile and non-mechanized fishing vessels should be allowed to fish between 5 - 40 meter depth zone; a vessel tracking/ monitoring system (VT/MS) should be set up and the number of shore stations should be increased; skills and capacities of the concerned staff in the DoF should be developed and there should be effective coordination amongst the DoF, Bangladesh Navy, Coast Guard and the MMD. If required a Memorandum of Understanding could be agreed between the concerned agencies. The Group also suggested that the MMD may mount a campaign to hasten the process of registration and motivate the fishing vessel owners to register their boats.

14.0 The presentation for Group II was made by Dr Md. Sharifuddin, Assistant Director, Marine Fisheries Office, Chittagong. The Group suggested that the total number of fishing vessels (trawlers, mechanized and non-mechanized) should be reduced to ensure sustainable exploitation of the resources; the dual system of licensing/ registering of fishing boats should be stopped and the licensing/ registration fee should be reviewed; regular stock assessment

should be undertaken and data on fish landings should be collected on a regular basis; both Maximum Sustainable Yield (MSY) and Maximum Economic Yield (MEY) should be estimated and the post-harvest practices should be improved to ensure the quality of the harvested fish. The Group also suggested that the 'Zaman Committee Report' on trawlers should be implemented.

15.0 Professor A K M Nowshad Alam, Bangladesh Agricultural University made the presentation on behalf of Group III. The Group suggested that the Fisheries Policy document of Bangladesh should be revised in conformity with the FAO CCRF and good practices and lessons learnt from the experiences of neighboring countries should be incorporated in the policy. The revised policy should also have necessary provisions for introduction of MCS in the country. Along with the policy, the Group recommended revision of the existing legislation so that it confirms to the requirements of CCRF and all legislations having bearing on the fisheries sector should be harmonized. The Group also suggested that management frameworks should be developed for the commercially important species. It felt that presently many management measures like closed season, marine sanctuary, catch and mesh size regulations were not being effectively implemented despite their inclusion in the strategies approved by the Government. It suggested that for making a comprehensive strategy, an interdisciplinary high powered ministerial committee should be formed where the lead agency should be the DoF. In conclusion the Group recommended the conduct of a gap analysis, organizational and infrastructure strengthening and consolidation of database and scientific reporting.

16.0 The presentation for Group IV was made by Mr Habibur Rahman Khondakar, Project Director, Freshwater Prawn Culture and Extension Project, DoF. The Group suggested greater linkage and coordination between various agencies dealing with the marine fisheries sector in Bangladesh. With regard to institutional strengthening, the Group recommended strengthening in terms of manpower, equipment, skill enhancement and capacity building. In this regard, the Group suggested that the experience of neighboring countries should be taken into consideration. The Group also recommended vocational and short-term training for fishers throughout the coastal belt, proper utilization of print and electronic media to create awareness, strengthening of mechanism for co-management approaches and review of the modalities for resource survey.

17.0 The Group presentations generated discussions and a number of suggestions were made in the plenary, which are summarized below:

- A cadre of enforcement officers should be created from the existing manpower.
- Implementation of MCS in Bangladesh would need strong coordination amongst concerned agencies such as MoFL, DoF, Navy, BCG, etc.
- Registration of fishing vessels should be accorded top priority and modalities worked out by the DoF/ MoFL and the MMD. The registration procedure should be transparent and suggestions of fisher community should be given due consideration.
- Fleet adjustment may be necessary to decide on the optimum size of the fishing fleet keeping in view the harvestable fish stocks.
- A manual on MCS would be useful in implementation of the recommendations of the National Workshop. The manual should elaborate on the procedures of implementation of different activities, the implementing agencies, fund requirement, time-frame, etc.

- Creation of zones for different categories of fishing boats will help in reducing conflicts and also promoting sustainable fisheries.
- The depth criteria for fishing trawlers should be reviewed as the existing requirement of fishing in depths beyond 40 meters was a debated issue. It may also be necessary to debate whether zoning should be done on depth criteria or based on distance from the shore.
- The Bangladesh Navy and Coast Guard need strengthening to implement MCS and also assist the fishers at sea. Presently, the Bangladesh Navy has five ships, which regularly carry our surveillance. The BCG is lacking in resources. Since the Coast Guard Act, 1984 specifies its role in MCS, the BCG needs to be strengthened both in terms of patrol vessels and also for air surveillance. Until, the capabilities of Coast Guard are strengthened, the Navy and Coast Guard should work together.
- It should be mandatory for fishing boats to maintain log books and provide data to the DoF and other concerned agencies.
- Pollution from land-based sources to the marine waters is increasing and impacting the marine fauna and flora. This needs serious consideration and the inflow of pollutants to the sea should be checked.
- Fish landings is scattered and all fish is not landed at the landing centres. Many landing centres are also silted and boats cannot berth and discharge their cargo. The landing centres are poorly managed. If all the existing landing centres are properly maintained and fish landings take place at the designated places, it will be easy to implement MCS.
- New landing centres should be established after proper survey and socio-economic evaluation of the proposed site. Quality control is also very important at the landing sites.
- A one-stop service should be provided for registration of fishing vessels and the MMD should be tasked with this responsibility. The licensing powers should be decentralized to the Fisheries Officers of the coastal districts.
- Mesh size regulations should be such that fishes are given at least one opportunity to breed and propagate. This would help in stock recruitment.
- Mangroves and other breeding grounds should be protected and no fishing should be permitted in such areas.
- Catch-based survey should be initiated prior to the stock assessment.
- The services of Bangladesh Space Research and Remote Sensing Organisation (SPARRSO) should be used for identification of potential fishing zones and satellite technology should be increasingly used in the sustainable development of fisheries sector in the country. Similarly, the services of Fisheries Research Institutions should be availed, especially in matters related to stock assessment, etc.
- Colour coding should be carried out for different categories of fishing vessels.
- New surveillance check posts should be set up along the coast line (such as Borguna, Satkhira, Patherghata, Bagerhat, etc.) Surveillance should also be carried out at sea and should be backed by law.
- Involvement of fisher community in MCS and related activities should be encouraged to foster community's ownership of the resources and also making the activities cost-effective.

18.0 Based on the recommendations accrued from each Group, a draft Action Plan on Implementation of MCS in Bangladesh was presented by Dr Yadava. The Draft Plan was discussed point-by-point and valuable suggestions were made by the participants. Based on the suggestions, the final Action Plan was adopted by the National Workshop. The Action Plan is placed as *Annex 4*.

19.0 Summing up the adoption of the Action Plan, Dr Yadava said that he was highly satisfied with the outcome of the National Workshop. Complimenting the Government of Bangladesh on taking the lead in implementation of the recommendations of 'Chittagong Resoluution', Dr Yadava said that the Action Plan was comprehensive and its implementation would contribute to the sustainable development of the marine fisheries resources in Bangladesh.

20.0 In the concluding session of the NW-MCS, Mr Islam, chairperson said that it might not be possible to look into the entire Action Plan at one go. A group would be constituted to prioritize the actions to be taken. The group would also be mandated to identify the modalities of implementing the Action Plan. He said that in the past marine fisheries was not given due importance and it was dealt in a fragmented manner. However, things have changed now and the gaps are being reduced in a phased manner. "We are looking at the marine resources in a more comprehensive manner and would like to have sustainable exploitation of the resources from this sector. In the coming days, we would also be having a research vessel, which would be a big achievement", said Mr Islam. In conclusion he thanked all the participants and declared the National Workshop closed.

21.0 Mr Nasiruddin Md Humayun proposed the vote of thanks. He said that the fish stocks were not resilient and the people who were dependent on the resources would suffer if overexploitation and bad practices depleted the stocks. He reiterated that the Royal Embassy of Denmark through SICD Project would be willing to provide support for development of policies in this regard.

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Annex 1

Details of Topics for Group Discussions

Group I: Registration and Licensing of Fishing Boats, Demarcation of Zones, Colour Coding, Communication and Surveillance Infrastructure	**Group II: Estimation of Fishing Capacity, Maximum Sustainable Yield and Optimization of Fishing Fleet**	**Group III: Governance, Policy and Legislative Support to MCS**	**Group IV: Institutions, Human Resource Development and Role of Non-Governmental and Community-Based Organisations**
• Fishing vessel registration procedure • Fishing vessel licensing procedure • Fishing area/ zones for different categories of fishing boats/ fishing practices • Procedures for boat identification marks/ colour coding • Communication system and surveillance procedures, including setting up of shore stations and inspection of boats at port and at sea	• Estimation of fishing fleet size (capacity) and its distribution in the coastal areas • Estimation of maximum sustainable yield (MSY) of commercial fin and shell fish species • Enumeration of fishing harbours/ fish landing sites • Analysis of fisheries and fishing effort in coastal waters/ Exclusive Economic Zone • Adjustment of fishing fleet to MSY or best scientific estimates available	• Fisheries policy framework • Fisheries management framework • Fisheries legislation and its applicability to meet the need of MCS System • Existing legislation of other concerned Ministries and their applicability to meet the need for MCS System • Operational and logistical responsibilities for MCS	• Institutions and their capacities in meeting the need of MCS System • Empowerment of Department of Fisheries to enforce MCS System • Training needs for establishment of MCS System • Community mobilization and networking • Co-management of resources

Annex 2

Group-wise List of Participants

Sl. No	Group I	Group II	Group III	Group IV
1.	**Facilitator:** Giasuddin Khan, Senior Fisheries Specialist, WorldFish Center	**Facilitator:** Sheikh Mostafizur Rahman, Project Director, Regional Fisheries & Livestock Development Project, Barisal Component.	**Facilitator:** A K M Nowshad Alam, Professor, Department of Fish Nutrition, Bangladesh Agricultural University.	**Facilitator:** Habibur Rahman Khandaker, Project Director, Freshwater Prawn Culture and Extension Project.
2.	Nasiruddin Md. Humayun, Project Director, SICD Project	M A Khaleque, Deputy Director, (Shrimp) Department of Fisheries	Bundit Chokesanguan, Head, Training Department, SEAFDEC.	Y S Yadava, Director, BOBP-IGO,
3.	Mainuddin Ahmed, Senior Assistant Secretary, Ministry of Fisheries and Livestock	A K Yousuf Haroon, National Adviser, SICD Project.	Md. Sanaullah, Director, Marine Fisheries Office.	Md. Matiur Rahman, Deputy Secretary (Planning), Ministry of Fisheries and Livestock.
4.	Md. Sirajul Islam, Assistant Chief (Marine Section), Department of Fisheries.	Md. Serajuddin, District Fisheries Officer.	Md. Mizanur Rahman Siddique, Senior Upazila Fisheries Officer, Cox's Bazar Sadar.	Abul Hashem Sumon, Assistant Director, Department of Fisheries.
5.	Md. Shafiqul Islam, Assistant Director, BMFCB Project, Department of Fisheries.	Syed Arif Azad, District Fisheries Officer, Mymensingh.	Md. Jubaer Ahmed Chowdhury, Assistant Director, MFCB Project.	Md. Yousuf Khan, Assistant Director, SICD Project.
6.	Md. Kabir Ahmed, District Fisheries Officer, Cox's Bazaar.	Md. Sharifuddin, Assistant Director, Marine Fisheries Office.	Md. Iqbal Harun, Quality Control Officer.	Md. Jafar Ahmed, Principal Scientific Officer.

Sl. No	Group I	Group II	Group III	Group IV
7.	Md. Aminul Islam, Chief Fisheries Extension Officer, Department of Fisheries.	Zafar Ahmed, Professor, Institute of Marine Science and Fisheries, University of Chittagong.	Md. Latif Siddique, Upazila Fisheries Officer, Ramu, Cox's Bazaar.	Md. Wahedun Nabi Chowdhury, Deputy Director, Marine Fisheries Office.
8.	Md. Shafiqul Islam, Principal Officer, Mercantile Marine Department, Chittagong, Bangladesh.	Ms. Anar Koli, Fisher's Representative, Vill- Gatiarchar Jalodas Para, Upazila-Chakaria, Cox's Bazaar.	Afazur Rahman Chowdhury, Deputy Director (Plans), Coast Guard HQ.	Mohammad Saidur Rahman, Deputy Director of Naval Operations, Naval Headquarters.
9.	Md. Nasiruddin Sada, Bio-Chemist, FIQC, Department of Fisheries.	Md. Shahjalal, General Secretary, Bangladesh Marine Fisheries Association.	Md. Saeedullah, Principal, National Maritime Institute, Chittagong.	Md. Shahab Uddin, Chief Scientific Officer (c.c), Bangladesh Fisheries, Research Institute.
10.	Jalilur Rahman, Senior Scientific Officer, Bangladesh Fisheries Research Institute.	A B M Anwarul Islam, National Project Director, Bangladesh Marine Fisheries Capacity Building Project, DoF.	Zafar Ahmed, Director, PROTTOY, Cox's Bazaar.	A K M Shamsul Islam Rokon, Director, Sailor's Training Institute, Chittagong.
11.	Md. Fariduddin Ahmed, Unit Manager (Trawler), Fish Harbour, Chittagong.		Jainal Abedin Mistiry, Boatman, Upazila-Chakoria, Cox's Bazaar.	Kazi Saif Rahman, Member Secretary, Mechanized Fishers Boat Owners Association, Chittagong.
12.	Md. Abdus Shahid, Principal Scientific Officer, Dhaka.			Kursed Alam, Executive Director, CODEC.
13.	Shamsul Islam Rashid, President, Marine Fisheries Academy Ex-cadet Association.			
14.	Md. Kafiluddin Kaiya, Assistant Director, SICD Project.			

Annex 3

Group I: Registration and Licensing of Fishing Vessels, Demarcation of Zones, Colour Coding, Communication and Surveillance Infrastructure

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
1.0	Fishing vessel registration procedure.	***Trawler and Mechanized vessel*** • Mercantile Marine Department (MMD) registers a vessel and provides Certificate of Inspection. • 7 000 vessels registered so far. • Renewal figures not known. ***Non-mechanized vessel*** • MMD does not register.	Strengthen the registering capacity of MMD. • MMD should mount a campaign and motivate vessel owners to register.	• Inter-ministerial discussions between Ministry of Fisheries & Livestock (MoFL) and Ministry of Shipping (MoS) on the modalities of the campaign and ensuring registration in a time-bound manner. • Routine monitoring and surveillance for registration check.	• MMD has office at Chittagong, Cox's Bazaar, Kutubdia, Saint Martin's Island and Khulna. • MMD registers fishing vessels of over 16 bhp engine.
2.0	Fishing vessel licensing procedure.	***Trawler and Mechanized vessel*** • MoFL and the Department of Fisheries (DoF) provides fishing license only to registered vessels.	One stop service point for registration and licensing.	To integrate MMD registration and DoF licensing.	• Licensing powers should be decentralized to DFOs of the coastal districts. • Institutional capacity to be enhanced in terms of manpower and skills.
3.0	Fishing area/ zones for different categories of fishing boats/ fishing practices.	***Trawler and Mechanized vessel*** • Permitted to fish beyond 40 m depth. ***Non-mechanized vessel*** • No depth or distance barrier.	• No fishing up to 5 m depth / 3 nautical mile distance. • Non-mechanized vessel will fish beyond 5 m depth up to 40 m.	• Amendment of Rules will be necessary. • Awareness campaign and motivation would be required.	• Protection of breeding and nursery grounds will ensure adequate recruitment and enhance fish stocks in the long run.

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
					• Fisheries Officers should have Magistrate powers for enforcement of Rules & Regulations.
4.0	Procedures for vessel identification marks/ colour coding.	Color identification markings for trawlers have been made.	• Zones should be established for different categories of fishing vessels. • A Vessel Monitoring and Tracking System (VTMS) should also be established.	• Effective stakeholder participation (e.g. DoF/ MoFL/ Coast Guard/Navy/ Fishers and their Associations, etc) will ensure proper implementation of MCS. • Information Technology should be integrated into the MCS Programmes.	---
5.0	Communication system and surveillance procedures, including setting up of shore stations and inspection of vessels at port and at sea.	• No IT based communication system. • Poor surveillance system. • Inadequate shore stations. • Poor inspection of vessels at port. • Inadequate inspection of vessels at sea.	• A VTMS should be established. • The number of shore stations should be increased to at least four. • The capacity of DoF staff should be enhanced. • An effective co-ordination mechanism is required. A formal MoU should be entered between DoF/ Navy/ Coast Guard/MMD.	The DoF will take the initiative to complete the proposed activities in consultation and coordination with MoFL/ Coast Guard/ Navy/ MMD.	---

Group II: Estimation of Fishing Capacity, Maximum Sustainable Yield and Optimization of Fishing Fleet

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
1.0	Estimation of fishing fleet size (capacity) and its distribution in the coastal areas.	**Commercial** • At present 141 fishing trawlers are permitted to fish in the Bangladesh EEZ. • This includes 40 shrimp trawlers (all licensed) and 101 white fish trawlers (of which 31 are under trial fishing and 70 are licensed). • Presently, the major fishing areas are Middle ground (main fishing ground), South patch, South of south patch and Swatch of no ground. • The shrimp trawlers are in the size range of 30-40 m OAL, 30-60 mt in gross tonnage and have a crew capacity of 25-35. • White fish trawlers are 28-30 m in OAL, gross tonnage 120-150 mt and a crew capacity of 20-40. **Artisanal** • The total number of artisanal fishing boats is 44 500 (mechanized 22 000 and non-mechanized 22 500) of which 6 400 are registered by the MMD and 3 450 are licensed by the DoF.	**Commercial** • Total number of trawlers (both shrimp and white fish) should be reduced. **Artisanal** • Total number of mechanized and non-mechanized boats must be reduced to optimize the size of the fishing fleet. • The quality of harvested fish should be maintained to reduce post-harvest losses. • The dual procedure for licensing/ registering of fishing boats should be removed. • The 31 numbers of fishing trawlers under 'trial fishing' should be banned. • 50 numbers of modern fishing trawlers already licensed should commence their trawling in the deep sea. • The license/ registration fee should be reviewed.	• Unlicensed fishing boats (both mechanized and non-mechanized) must be brought under licensing/ registration without further delay. • A one-stop center should hasten the registration/ licensing procedure.	• A political will and commitment will be essential to progress the recommendations. • The recommendations of the 'Zaman Committee' should be implemented immediately. • A one-time license fee may be levied on small motorized boats.

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
		There is excessive trawling pressure. For motorized boat, licensing/ registration system is different due to dual administrative procedures.			
2.0	Estimation of maximum sustainable yield (MSY) of commercial fin and shell fish species.	• The catch data from the industrial trawlers should be collected from their log-sheets. • For artisanal fishing boats, the landings should be estimated at the landing centres.	• Catch monitoring/ assessment needs to be done. • Maximum economic yield (MEY) should be estimated.	• Initially, the catch assessment should be done through the Marine Fisheries Capacity Building (MFCB) Project. After completion of the Project it should be a regular activity of DoF.	• The MFCB should have an exit plan, which should be approved and implemented by the MoFL.
3.0	Enumeration of fishing harbours/ fish landing sites.	• The existing statistics and information is based on the data collected under the 'Strengthening of Coastal and Marine Fisheries Project'.	• The information needs to be updated	• The MFCB Project may provide the logistic support for this activity. • Subsequently, the Local Stakeholder Committees (LSC) must continue to maintain and update the information.	• Local Stakehoder Committee (LSC) should carry forward the work.
4.0	Analysis of fisheries and fishing effort in coastal waters/ Exclusive Economic Zone.	• The catch data from the industrial trawlers should be collected from their log-sheets. • For artisanal fishing boats, landings should be estimated at the landing centres.	• Regular stock assessment and catch monitoring statistics is required.	• The MFCB Project may provide the logistic support for this activity. • Subsequently, the Local Stakeholder Committees (LSC) must continue to maintain and update the information.	• The MFCB should have an exit plan, which should be approved and implemented by the MoFL.
5.0	Adjustment of fishing fleet to MSY or best scientific estimates available.	• MSY estimation is available, but not through best scientific procedures.	• Estimates for both MSY and MEY is required.	• The MFCB Project may provide the logistic support for this activity. • Subsequently, the DoF/ MoFL should continue the activities.	• Financial resources can also be sought from donor agencies.

Group III: Governance, Policy and Legislative Support to MCS

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
1.0	Fisheries policy framework.	Fisheries Policy was published in 1996-97. Later a draft comprehensive review of Marine Fisheries Sector was made in 2006 (Marine Fisheries Sector Sub-strategy). Still there are many gaps in the Sub Sector Policy that need to be addressed. Fisheries policies implemented by other sectors (Department of Forestry, Department of Environment, Department of Local Government, Department of Water Resources, NGOs) are scattered and uncoordinated.	• A thorough revision is needed based on local requirements and in conformity with the FAO CCRF. • Lessons learnt from neighboring countries and their good practices may be considered for adoption. • An interdisciplinary high powered ministerial committee should be formed for the purpose and the said committee should be coordinated by the MoFL. • The Fisheries Policy should also be reviewed to incorporate the requirements of MCS in the country.	• The proposed committee will review the existing strategies involving all stakeholders. • The MOFL will coordinate.	Support from the government, political leaders, etc. will be vital for the policy formulation and also its implementation.
2.0	Fisheries management framework.	• Presently, there is no comprehensive Marine Fisheries Management Framework (MFMF): • Some fisheries management frameworks exist for trawl fishery (bottom trawling), hilsa fishery, long line, gill net, push net, etc. • Lack of updated resources information and database. • Lack of appropriate logistic supports (infrastructure,	• A comprehensive MFMF for all commercially important species is required. • Many management measures are not being implemented despite their inclusion in the strategy like close season, sanctuary, catch composition, mesh size regulation, CPUE, etc. • A MFMF is also required for hilsa, shrimp	• The MFMF should be prepared in consultation with the stakeholders.	--

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
		manpower, fund, research). • Lack of proper regulation, compliance and enforcement.	post-larvae collection, brood fish collection, etc.		
3.0	Fisheries legislation and its applicability to meet the needs of MCS system.	• Protection and Conservation of Fish Act, 1950. • Marine Fisheries Ordinance, 1983. • Marine Fisheries Rules ,1983 (Amended in 1993). • Good number of management and control measures have been enacted subsequently. While some are precise, others are not well defined and updated.	• The existing legislations need a thorough review and revision wherever required to confirm with the present requirements and also with international instruments such as the FAO CCRF, etc.	• Such review and revision should be carried out in consultation with the stakeholders.	
4.0	Existing legislation of other concerned Ministries and their applicability to meet the needs for MCS System.	• Environmental Conservation Act, 1995. • Forest Act, 1927. • Rules to Regulate Hunting, Shooting and Fishing within the Controlled and Vested Forests, 1959. • Territorial Waters and Maritime Zones Act, 1974. • The Bangladesh Merchant's Shipping Ordinance, 1983.	• Harmonization of the concerned legislations is required • For effective implementation, all legislations should brought be under one umbrella.	• Integrated maritime enforcement and compliance body may be formed with the involvement of concerned stakeholders. • Bottom up approach should be adopted.	
5.0	Operational and logistical responsibilities for MCS.	Operational responsibilities are inadequate because of the following: • Lack of facilities; • Lack of accurate statistics; • Lack of scientific information system;	To ensure sound operational and logistical responsibilities, the following are necessary: • Gap analysis; • Organizational strengthening; • Infrastructure strengthening; • Database and scientific		

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
		• Inadequate trained manpower; • Lack of awareness; • Lack of supporting legislations; • Large number of inaccessible landings; • Huge post-harvest losses; • Multiplicity of agencies; • Lack of funds; • Lack of Vessel Monitoring System(VMS).	information support. • Comprehensive research; • Strengthening the GIS unit of DoF; • Strengthening of organizational set up in every coastal upazila.		

Group IV: Institutions, Human Resource Development and Role of Non-Governmental and Community-Based Organizations

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
1.0	Institutions and their capacities in meeting the need of MCS System.	• The following institutions have a major stake in the marine fisheries sector: MoFL, DoF, Bangladesh Fisheries Research Institute, MMD (MoS), Navy, Coast Guard, Administration, Forest Department. • The capabilities of implementing MCS are limited.	• Effective linkage and co-ordination between different agencies is necessary. • Additional manpower is also required along with the equipment, wherever necessary. • Establishment of essential infrastructure to implement MCS programmes.	The MoFL and DoF will play the lead role in implementation of MCS in Bangladesh.	Department of Environment should also be included in the main agencies.
2.0	Empowerment of Department of Fisheries to enforce MCS System.	MoFL is empowered by the 1983 Ordinance.	Need to be updated with experience of neighboring countries.	Through Government legislation by the MoFL	---

Sl No	Issue	Present Status	What needs to be done	How it will be done and by whom	Remarks
3.0	Training needs for establishment of MCS System.	Presently, the training facilities are limited.	• Institutions need to be organized to formulate training tools. • Vocational training and short-term training for fishers. • Skill and capacity building of DoF officials and resource users in coastal areas.	DoF, BFRI, Fishermen's Societies, NGO's	Co-ordination by the DoF.
4.0	Community mobilization and networking.	Presently, it is limited and restricted to certain areas only.	• To be organized throughout the coastal belt areas. • Proper utilization of print and electronic media.	• Formation of area-wise committees. • GO, NGO/ local society.	
5.0	Co-management of resources.	Co-management approaches have been discussed in various fora but application in the marine fisheries sector is limited.	• Stakeholders' consultation is a pre-requisite to decide on the modalities of implementation of co-management approach in the marine fisheries sector. • Necessary legislative support to be provided to formalize the stakeholder approach.	The DoF should play a lead role in organization of the Consultation and also in finalization of the requirements to implement co-management approach.	
6.0	Resource Survey.	The DoF has limited capabilities in undertaking resource surveys.	An action plan is required for undertaking resource survey in the marine fisheries sector.	• Trained manpower • Additional funds	---
7.0	Marine Fish Catch Monitoring.	Presently, there is no organized programme for monitoring of marine fish landings.	An action plan is required for monitoring of marine fish landings in Bangladesh.	• Organisation of fish landing centres and to ensure that the fish catch is landed at the designated centres. • Finalization of sampling methodology for estimation of fish landings on regular basis.	---

Annex 4

Action Plan

A. Fish Stock Assessment

- Monitoring of catch and stock assessment should be carried out regularly. The provisions under the Bangladesh Marine Fisheries Capacity Building (MFCB) Project should be utilized for the purpose. After completion of the MFCB Project, the Department of Fisheries (DoF) should carry out this function with the involvement of the Local Stakeholder Committees (LSCs).
- Resource survey(s) should be organized, for which the Government may consider additional funding. Such survey(s) may take into account both maximum sustainable yield and maximum economic yield.
- Marine fish landings should be estimated on the basis of a statistically designed programme. To achieve satisfactory results, it needs to be ensured that fish catches are landed at designated fish landing points (Fishing Harbours or Fish Landing Centres).

B. Optimization of Fishing Fleet

- A thorough review of the mechanised and non-mechanised fishing fleet should be undertaken. Based on the present marine fish landings, available data on catch per unit effort and other biological parameters, the fishing fleet (both mechanised and non-mechanised and trawlers) should be adjusted and excess capacity phased out in a time-bound manner.
- The 31 numbers of 'under trial' fishing vessels operating at present must be banned. The 50 numbers of modern fishing trawlers already licensed should commence fishing in the deep sea.

C. Registration and Licensing of Fishing boats

- All unregistered and unlicensed fishing boats should be registered/ licensed in a time-bound manner.
- The dual system of registration of fishing boats by the Mercantile Marine Department (MMD) and licensing by the DoF should be discontinued. There should be one-stop service point (single window) for registration and licensing under the control of DoF.
- The registration/ license fee structure should be reviewed.

D. Zonation of Fishing Grounds

- No fishing should be permitted in the coastal waters up to 5 meter depth / 3 nautical mile (NM) distance. Non-mechanized fishing vessel may be allowed to fish beyond 5 meter depth and up to 40 meters. The zonation should take into consideration aspects such as the size of the fishing vessel, gear to be deployed and the engine horsepower.

E. Review of Fisheries Legislation

- A thorough review of the existing fisheries and supporting legislation to be undertaken and necessary amendments to be proposed keeping in view the requirements of Monitoring, Control and Surveillance (MCS).
- The review may also consider harmonization of the fisheries and supporting legislation with the global fisheries instruments and other documents aimed at sustainable development of the fisheries resources.
- To make the implementation effective, harmonization of the legislation may be considered.

F. Policy and Management Frameworks

- The exiting policies on fisheries development may be reviewed and, if necessary revised to meet the local requirements and also to confirm to the global instruments on sustainable fisheries development.
- The good practices adopted in the neighbouring countries may also be considered while reviewing the fisheries policies.
- A comprehensive marine fisheries management framework should be formulated for all commercially important fin and shellfish species. Implementation of the management framework already developed for species such as hilsa (*Tenualosa Ilisha*) should be strictly enforced.

G. Institutional Strengthening and Human Resources Development

- Capacity building of officials of the DoF, MMD and other concerned organizations in both government and non-government sectors should be initiated in a planned manner. A GAP Analysis may be undertaken to arrive at the actual needs of capacity building and intuitional strengthening.
- Strengthening of the fisheries institutions and other agencies concerned with the implementation of MCS (*e.g.* Coast Guard, Navy) should be taken up in a time-bound manner. This should also include strengthening of the organizational set up of the DoF at the coastal District and Upazila levels.
- The use of information technology should be stepped up in implementation of MCS. The Geographical Information System established in the DoF should be further strengthened.
- Skills and capacities of fisher groups and community-based organizations should be built through short-term and highly focused vocational trainings and hands-on workshops.
- Fisher communities in all the coastal districts should be mobilized to participate and assist in the MCS activities. The print and electronic media should be made use of to the fullest extent in creating awareness on MCS and its objectives.
- Cost-effective approaches such as 'co-management' of resources should be promoted to achieve the objectives. Stakeholder consultations should be initiated to decide on the modalities of co-management approach for MCS and related activities.
- Implementation of MCS should ensure that the livelihoods of small-scale fishers are safeguarded.
- The use of MCS should not be restricted to enforcement alone, but for providing multiple benefits to the fisher community such as promoting safety at sea, reducing

post-harvest losses and promoting hygiene and sanitation in boat and at landing and berthing sites.

H. Coordination and Networking

- An interdisciplinary high powered inter-ministerial committee should be constituted to coordinate the activities and also monitor the progress through performance indicator. Such a committee should be coordinated by the Ministry of Fisheries and Livestock.
- Formal and effective linkages should be established between the key players - DoF/ Navy/ Coast Guard/ MMD for implementation of the MCS programme.

* * *

Monitoring, Control and Surveillance in Small-scale Fisheries – Guiding Principles and Practices

Yugraj Singh Yadava[1]

1.0 Introduction

Fisheries sector occupies a unique status in the national economy, socio-cultural setting, rural employment and food and nutritional security of Bangladesh. It is estimated that about 1.77 million fishers are engaged in the primary sector and 67 300 in the secondary sector. The sector contributes significantly to the national GDP and also to the export earnings. The sector's development goal is to attain self-sufficiency in fish and fish products, socio-economic enhancement of fishing communities and fish farmers, earning foreign exchange and poverty reduction through conservation and sustainable utilisation of fisheries and aquaculture resources.

2.0 Background

2.1 Fisheries Sector

Lying between the Himalayan Mountains and the Bay of Bengal in the delta of the rivers Ganges and Brahmaputra, the fisheries resources of Bangladesh are unique. It has a coastline of 710 km, an Exclusive Economic Zone (EEZ) of over 164 000 sq. km and an equally large area under estuaries and brackishwaters. Marine fish production in Bangladesh increased from 95 000 metric tonnes (mt) in 1975-1976 to 294 000 mt in 1996-1997. During 2001-2002, the marine catch was estimated at 415 420 mt, showing an increase of about 52 percent. In 2005-2006, the catch was estimated at 479 810 mts, registering a slower growth rate as compared to the previous periods. Marine fisheries contribute about 20 per cent of the total fish production of the country. In 2005-2006, the small-scale or artisanal fishing contributed about 93 percent of the total marine production of the country and the remaining 7 percent was contributed by the industrial fleet.

The major fishing gear employed in the estuaries and coastal areas are the gill net, set bag net, trammel net, long line and beach seine. Some are operated by boat and some without. The set bag nets, an important gear in the coastal waters, consists of Estuarine Set Bag Net (ESBN) and Marine Set Bag Net (MSBN). While the ESBN is extensively used in estuaries within 3-10 meter depth, the larger MSBNs are operated during the dry season in deeper waters. During the winter season, fishers migrate along the coast and many of them switch to river fishing during the off-season.

Estimates from various reports show that there are about 45 500 artisanal boats, of which 35 000 are non-mechanised. The remaining 10 500 mechanised boats include 2 824 licensed from the marine fisheries office and some 6 200 registered with the Mercantile Marine

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Department (MMD). Mechanised boats generally fish with drift gill nets and long lines; many of them use MSBNs. They vary in length from 5m to 15m and operate with 22 - 60 hp engines and a crew of 14-18.

In addition to the above fishing fleet, commercial fishing is undertaken in the offshore waters by a fleet of about 44 shrimp and 15 finfish trawlers. Most of the shrimp trawlers are 30 - 40 meter in length with 450 - 750 BHP engines operated by a crew size of 20 - 25. The overall length of finfish trawlers ranges from 28 - 30 meter. The Marine Fisheries Ordinance has reserved up to 40 meter depth for artisanal fisheries, but many trawlers are fishing within the 40 meter depth zone.

The ESBN fishery is a traditional fishery and also a source of livelihood for a large population of the mostly poor rural inhabitants. It is responsible for much of the country's marine and brackishwater capture fisheries production. The push net fishery is of more recent origin, having evolved to supply Bangladesh's rapidly growing coastal aquaculture *(shrimp)* industry. The fishery not only provides a majority of the seed requirements of the shrimp farms but also provides seasonal livelihoods for several thousand poor people. However, the fishery is destructive because over 90 per cent of its catch consists of juveniles of other commercially important fin and shellfish species, which are discarded.

2.2 Issues in Management

The objectives of the 2006 Marine Fisheries Sector Sub-Strategy of the Department of Fisheries (DoF) are to 'ensure the sustainable management of the marine sector through the allocation of fishing rights and its management to communities and relevant fishing groups and by providing the regulatory framework for this management'.

However, presently the coastal marine fishery portrays a picture of unregulated access, overcapacity and low catches per unit effort and fishing rights conflicts. In most cases, the entire community relies on fishing as its chief source of livelihood, lacking alternative means of livelihood. A large proportion of fish stocks - both marine and inland are fully exploited, over-exploited, depleted or in need of recovery. Except the commercial trawl fishery, which is regulated to a certain extent, the small-scale/ artisanal fishery is almost unregulated.

Until the mid-1960s, fishing in the estuaries and coastal waters was carried out by traditional craft. Mechanisation of boats started around 1975 and has been steadily increasing ever since. A 2001 survey showed that about 1.0 million people are engaged in coastal fisheries. Most of them neither own land nor any other asset. Given the complexity of many artisanal fisheries, it is important to develop effective fishery management systems and operational management plans for them.

License for fishing in marine waters is given by the DoF while the MMD has the authority to register the boats. Fishing license is given only to registered boats. The traditional country boats are neither registered nor inspected by the MMD, as they do not meet the requirements for registration. The mechanised fishing boats are given fishing license only if they can produce the MMD registration certificate. The country boats, which are mostly fitted with shallow tube well engine, are not given fishing license, as they are not registered by the MMD. The validity of the license is given as per the Certificate of Inspection of the MMD. Currently, about 10 per cent of the mechanised boats are only registered. Unlike the Forestry Department, the DoF does not have the magisterial power and fisheries personnel depend on the executive and the police departments for enforcement of the provisions under the Fisheries Acts.

The fishing vessel registration is one of the principal bottlenecks in extending the licensing mechanism of the Marine Fisheries Office of the DoF. If the entire fishing fleet cannot be brought under the licensing mechanism of the DoF, monitoring their activities will be a far cry. The MMD is also ill equipped to enforce its existing legislation, as there are only two offices of the MMD all along the coast. The Marine Fisheries Office proposes that the Registration and Certificate of Inspection of the small-scale fishing boats be handed over to them.

The Bangladesh Coast Guard has been set up under the Coast Guard Act, 1994 and has the mandate to *inter alia* protect the national interests in the maritime zones of Bangladesh, prevent illegal fishing in the maritime areas and patrol in the maritime zones. The Bangladesh Navy also patrols the EEZ of Bangladesh to monitor deep-sea fishing and prevent illegal poaching by foreign fishing vessels. However, the Coast Guard is ill equipped to handle the situation and needs considerable strengthening in terms of manpower and equipment, including patrol boats and other paraphernalia.

Small-scale fishing communities constitute a large population, which is mostly illiterate, poorest of the poor and has limited access to electronic media and other channels of information. In view of their remote location, ignorance, illiteracy, lack of access to mass media, etc making them aware about the significance of responsible fishing and implementation of other management measures and conservation related issues is an enormous task. Provisions of the existing Fisheries Acts and Regulations are also not known to most of the fishing communities and as such compliance level is very poor.

An effective and implementable legal framework is pre-requisite to management and conservation of fisheries resource. It also forms a major component of the control aspect in programmes related to monitoring, control and surveillance (MCS). The promulgation of the Fisheries Act (in 1983) gave significant control over the fishing operations, in particular the overwhelming problems of illegal fishing, both by domestic and foreign vessels. However, the greatest impacts on fisheries stem from the domestic fishing industry in the coastal and near-shore fishing zones, which now need to be addressed and controlled.

The ownership and management of fisheries resources are vested with different agencies, such as the Ministry of Fisheries and Livestock (MoFL), the Ministry of Land, the Ministry of Water Resources and the Ministry of Forest and Environment. At many times due to lack of coordination and consultation, the multiple ownership of resources also creates problems. However, as with the enforcement of fishery acts and regulations, the responsibility of introducing management measures and implementation of MCS should be one of the prime tasks of be MoF/ DoF.

3.0 Implementation of MCS in Bangladesh

Bangladesh fisheries exhibit a number of different fishery management situations; these range from the local, specific stock and specific fishery of perhaps a few tonnes to a number of different trawl fisheries, and then a largely under-exploited offshore fishery. The Sundarbans estuarine area also has a number of fisheries, and here again the MCS will need to be adapted to the management priorities. The country has also recognised that reducing fish stocks to biologically and ecologically harmful levels will result in loss of potential benefits as food, income, employment and others, both immediate and in long-term.

The main constraints, which impede practical application of MCS in Bangladesh, have been identified as follows:

- *Lack of accurate statistics in the small-scale fisheries sector, which contributes 93 percent of the total marine fish production.*
- *Lack of a scientific information system.*
- *Inadequate trained manpower at both management and operational levels.*
- *Lack of awareness at the community-level of the need for MCS.*
- *A large number of inaccessible landing places along the coast.*
- *Lack of supporting legislation to implement MCS.*
- *Multiplicity of agencies and lack of well-defined roles and jurisdictions;*
- *Inadequate funding for MCS.*

MCS in small-scale fisheries or in coastal areas presents a range of unique problems, which relate to large numbers of widely dispersed fishers operating within a fishery, mixed gear/ species and landing points. In the given situation, some of the main controls and instruments that could be used in implementing MCS in Bangladesh are:

(i) *determining the level of sustainable exploitation and other relevant information by data gathering, assessment and analysis;*

(ii) *registration of fishing vessels and areas of operation;*

(iii) *fishing effort control (through licensing);*

(iv) *selecting appropriate management instruments – fishing areas/ locations/ duration of fishing (zonation);*

(v) *development of fisheries management plans based on the principles of conservation of fish stocks in a sustainable manner;*

(vi) *controls in ports and at sea;*

(vii) *educating the community by dissemination of information;*

(viii) *promoting co-management strategies;*

(ix) *legal support for the fishery management plans and regulations to ensure the equitable allocation of resource; and*

(x) *implementation of regulations through licensing, reporting and enforcement of fishery laws.*

Legislative measures may be appropriate for sophisticated commercial fisheries, but generally in the case of artisanal/ small-scale fisheries in Bangladesh it may be important to reduce the need for conventional surveillance. Alternative methods need to be used to encourage compliance and thus reduce the need for confrontational enforcement, particularly in the light of the costs of management and limited resources generally available. An important approach to MCS in such fisheries is, where possible, to foster a strong local awareness on the need for conservation and management.

Another critical requirement for effective MCS is the establishment of a coordinating mechanism, with well-defined objectives and a clear work plan. MCS cannot be practiced in isolation by the Government and, therefore, coordination among stakeholders is essential. In Bangladesh, this also includes developing more synergies between the Coast Guard, MMD and the MoFL. The setting up of MCS can also assist in establishment of multiple channels of communication, which can provide information to the fisher community on weather, commodity and market prices, safety at sea aspects, hygiene, etc.

Therefore, any MCS programme will have a focus on the interaction between control and management of fisheries since control is not an end in itself but an essential corollary of resource conservation and management measures. In essence, the proposed MCS will be the Government's response to challenges posed by the anarchism that prevails in the fishery.

4.0 The Action Plan

In January 2008, the four member-countries (Bangladesh, India, Maldives, Sri Lanka) of the Bay of Bengal Programme Inter-Governmental Organisation along with experts met in Chittagong, Bangladesh to discuss implementation of the MCS within their national jurisdictions as also on a regional basis and at the end of the three-days Workshop agreed on a common agenda. This agenda, termed as 'Chittagong Resolution' is attached as Annex 1. The Resolution *inter alia* recommended that the 'member-countries undertake measures to formulate time-bound action plans for successful implementation of MCS and for strengthening the national agencies responsible for MCS'. In view of the 'Chittagong Resolution', one of the objectives of this National Workshop is also to formulate an 'action plan', which can guide the development of MCS in the country.

The main objective of implementing MCS in Bangladesh should be to secure responsible and sustainable management of fisheries resources while allowing an ecologically safe and economically profitable exploitation of living marine resources in the interest not only of today's population but also for posterity. The objective should also aim at bringing in a paradigm shift in the marine fisheries sector from open access to limited and controlled access regime and wherever possible allocating rights to the user groups.

While it is recognised that there are no unique solutions to the design and implementations of MCS system, the action plan, based on common principles and goals, will endeavour to meet the specific requirements of the objectives of the 2006 Marine Fisheries Sector Sub-Strategy of the DoF. The proposed framework of the action plan is suggested as follows:

(i) Review of existing marine fisheries management programmes and analysis of the fisheries in the coastal waters and the EEZ (this will inter alia include the registration of fishing vessels, number and category of fishing craft and gear, fishing harbours/ fishing landing sites, boat building yards, etc).

(ii) Review of the existing fishing vessel licensing and registration procedures and practices, fisheries legislations and of other concerned Ministries/ Departments (e.g. MMD).

(iii) Assessment of the MCS capacity and identification of institutional development requirements within the MoFL/ DoF and, if necessary, other concerned sister Departments (e.g. MMD).

(iv) Creation of a MCS Unit in the DoF.

(v) Preparation of an outline of procedures and practical application of fisheries MCS programme and its implementation on pilot basis (in one or two manageable sites).

(vi) Organisation of community groups at the selected sites and their orientation for participation in the MCS.

(vii) Training of core MoFL/ DoF/ MMD/ Coast Guard staff in MCS.

(viii) Organisation of hand-on workshops for the stakeholders.

(ix) Development of manual/guidelines essential for the implementation of MCS.

5.0 Conclusion

Fishers are a set of entrepreneurs engaged in one of the riskiest occupation of the world and creating livelihoods for millions of people in upstream and downstream. Therefore, the ultimate objective of MCS tools for small-scale and artisanal fisheries is not just to protect the resource but to stabilize the sector, minimize occupational hazards and optimize policy benefits. The small-scale fisheries sector can get immediate benefit from a successful MCS programme through (i) effective demarcation of fishing areas, (ii) better insurance deal from data strengthening, (iii) target fishing through resource mapping, (iv) sea-safety, (v) reflecting their stakes in fishing policy, (vi) stabilization of catch per boat hence income and (vii) possible jobs in land and sea-based monitoring systems. Implementation of MCS will also be a step forward in the fulfilment of the requirements of the Code of Conduct for Responsible Fisheries by Bangladesh.

Community motivation is the most important step for successful implementation of a MCS policy for small-scale fisheries. Sustainability or availability of fish for generations to come offers little or no incentive to artisanal fishers as they earn and live by the day. Promoting MCS as a business-strengthening package could be more appealing and effective in community mobilization for successful implementation of MCS in Bangladesh.

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Annex 1

The Chittagong Resolution

Conscious that the marine fisheries sector is highly important for the economies of member-countries of the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO);

Recognizing that the marine fisheries sector is a major contributor to the livelihoods, food and nutritional security and foreign exchange earnings of member-countries;

Realizing that a high percentage of the world's artisanal fisheries and small-scale fisheries are concentrated in South Asia, where many of the coastal stocks are almost fully exploited;

Recognizing that the marine fisheries sector largely operates in an open-access regime, and that the present condition of fisheries is largely attributable to weaknesses in the institutional and regulatory environment, a declining resource base and poor socio-economic conditions;

Realizing that monitoring, control and surveillance (MCS) regimes are weak in the marine fisheries sector of member-countries;

Concerned about the social and political constraints to regulating access to marine fisheries and to optimizing the fishing fleet;

Concerned that the current fisheries management regime for coastal fisheries in the region may lead to further unsustainable levels of exploitation of fisheries resources, and thereby impact the livelihoods of small-scale fishermen;

Concerned that the supporting regulations and policy framework relevant to the needs of MCS for small-scale fisheries, remain inadequately addressed by fisheries and maritime administrations in the sector;

Recognizing the limitations in institutional capacity of fisheries and maritime administrations in the region to undertake all responsibilities associated with the mandate;

Recognizing that the 1995 Code of Conduct for Responsible Fisheries (CCRF) of the FAO does not adequately address the need and requirements of MCS in marine fisheries;

Emphasizing the urgent need to address the multi-dimensional issue of MCS for small-scale fishermen in a holistic manner; and

Recognizing that the problem is not insurmountable;

We, the representatives of Fisheries and Maritime Administrations, Coast Guard and Fishermen's Associations, nominated by the Governments of Bangladesh, India, the Maldives and Sri Lanka, having participated in the BOBP -IGO Regional Workshop on Monitoring, Control and Surveillance for Small-scale Fisheries held in Chittagong, People's Republic of Bangladesh, from 16 -18 January 2008, now therefore:

Resolve to address, as a matter of urgency, the issue of MCS for small-scale fisheries;

Recommend that MCS requirements be comprehensively integrated into every member-country's fisheries policy and regulatory and managerial frameworks. This would include associated commitments under the CCRF and other regional, inter-regional or global instruments and initiatives;

Emphasize the need to rationalize institutional mandates and inter-sectoral cooperation at the national level, in order to enhance implementation of MCS in small-scale fisheries;

Recommend that fisheries and maritime administrations enhance their knowledge and database on the health of the fish stocks and on commensurate efforts required to harvest resources in a sustainable manner;

Recommend the development and implementation of education, training and awareness programmes which satisfy and promote MCS requirements;

Recommend that mandatory requirements for improving implementation of MCS be supplemented by other strategies which involve the participation of fisher communities, families, the media and other stakeholders in order to promote the adoption of a wide range of MCS measures;

Recommend that member-countries, while implementing MCS, also undertake measures to enhance the economic viability of small-scale fishing enterprises, as an essential element of the marine fisheries sector;

Recommend that member-countries make full use of the available technologies, including Vessel Monitoring System wherever feasible, in support of MCS;

Recommend that member-countries employ innovative measures such as co-management. This will be an effective cost-sharing measure for MCS and enhance the participation of fishers and other stakeholders in the management of marine fisheries resources;

Recommend that member-countries undertake measures to formulate time-bound action plans for successful implementation of MCS and for strengthening the national agencies responsible for MCS;

Recommend that member-countries undertake measures directed towards regional cooperation in ensuring successful implementation of MCS; and

Strongly recommend the formation and implementation of a regional MCS programme, employing a consultative and participatory approach, building upon institutionally derived data and the operational experience of small-scale fishermen.

Adopted on Friday, 18th January 2008 in Chittagong, Bangladesh.

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GoB/DANIDA/BOBP-IGO National Workshop on
Monitoring, Control and Surveillance in Marine Fisheries – Bangladesh
Cox's Bazaar, Bangladesh, 7 – 8 June 2008

Overview of the Monitoring, Control and Surveillance of Fisheries in Southeast Asia

Bundit Chokesanguan[1]

1.0 Introduction

Small-scale fisheries are dominant in the Southeast Asian region, but their contribution to the total landing varies depending on the status of fisheries development in the respective countries. In Indonesia and the Philippines, the contribution of small-scale fisheries to the total fish landing is relatively higher than that in Thailand, where industrial fisheries have grown faster than in other 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 transfer of modern technologies. The region's major fishing sector in terms of number of people involved can be categorized as small-scale, coastal and subsistence fisheries. Although the 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. The Monitoring, Control and Surveillance (MCS) is another component of fisheries management which has been promoted in the region in order to achieve sustainable fisheries. The definitions and interpretations that are commonly used by fisheries personnel in the Southeast Asian region are as follows:

- ***monitoring*** *– collection, measurement and analysis of fishing and related activities, including - but not limited to – catch, species composition, fishing effort, by-catch, discards, areas of operation.*
- ***control*** *– establishment of measures consisting of the specification of the terms and conditions under which resources can be harvested.*
- ***surveillance*** *– the checking and supervision of fishing and related activities to ensure that national legislation and terms, conditions of access, and management measures are observed.*

2.0 Fisheries Structure in the Region

The people in the Southeast Asian Region have greatly and historically depended on fish for their diet. Therefore, fisheries cannot be replaced by any 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 numbers

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in terms of traditional fishing gear 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 State in the region. Nevertheless, for better understanding in the absence of their definitions, the following tables show the fishing zones and the classifications of small-scale fisheries and large-scale fisheries in the region.

Table 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 to 3nm	From 3 nm to 20nm	From 20nm to 45nm	From 45nm to EEZ limit
Cambodia	From shore line to 20m depth	From 20m depth to EEZ limit		
Indonesia	From shore line out to 3nm	Four nautical miles from the outer limit of first fishing zone or 7nm from shore	Five nautical miles from the outer limit of second fishing zone or 12nm from shore	More than 12nm from shore
Malaysia	From shore line to 5nm	From 5nm to 12nm	From 12nm to 30nm	From 30 to EEZ limit
Myanmar	From shoreline to 5nm in the northern area, 10 nm in the southern area	From outer limit of first fishing zone to EEZ limit		
Philippines	From shore line our to 15 km	From 15 km to EEZ limit		
Thailand	From shore line out to 12nm	From 12 to EEZ limit		
Vietnam	From shore line to 30m depth in northern and southern area, to 50m depth in central areas	From 30 to 50m depth the EEZ limit		

Table 2: Classifications of Small-scale Fisheries and Large-scale Fisheries

Countries	Small-scale Fisheries	Large-scale Fisheries
Brunei Darussalam	Small-scale/ artisanal fisheries: Operating in all zones but concentrating in zone 1.	Industrial Fisheries: 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.

Countries	Small-scale Fisheries	Large-scale Fisheries
Cambodia	Coastal Fisheries: Small-scale fisheries with/ without engine (from 5 HP to 50HP) operating in zone 1.	Commercial Fisheries: More than 50HP operating zone 2.
Indonesia	Small-scale Fisheries: 1) Outboard engines < 10HP or <5 GT operating in zone 1. Trawls, purse seine and gill net are not allowed, except for purse seines with a head rope < 120 m. 2) 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.	Industrial Fisheries: 1) Inboard engine < 200 HP or 100 GT operating in zone 3, Purse seine is not allowed except those with a head rope < 600 m. 2) All fishing boats and fishing gear operating in zone 4.
Malaysia	Traditional Fisheries: Small-scale fisheries using traditional fishing gear (*i.e.* other than trawls and purse seine) with boats less than 10 GT operating in all zones concentration in zone 1.	Commercial Fisheries: Medium and large-scale fisheries using commercial fishing gear 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	Coastal Fisheries: Boats of less than 30 feet or using less than a 12 HP engine operating in zone 1.	Industrial Fisheries: Boats more than 30 feet long or using more than 12 HP engines operating in zone 2.
Philippines	Municipal Fisheries: Small-scale fisheries with boats of less than 3 GT that are allowed to operate in zones 1 and 2.	Commercial Fisheries: 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 in 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	Small-scale Fisheries: With boats of less than 5GT operating in zone 1.	Large-scale Fisheries: With boats of more than 5 GT operating in zone 2.
Vietnam	Small-scale Fisheries: Boats with no engine and with engine but less than 40 HP.	Large-scale Fisheries: Boats with engine more than 40 HP.

3.0 MCS in the Southeast Asian Counties

3.1 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 due to more than two decades of war and civil strife. At the same time, many institutions have been involved in the management of the sector, legally and otherwise, making it difficult for fishery planners and managers to perform their tasks well and to better arrange for community participation. Because 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.

3.2 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.

MCS is mainly done by the Department of Fisheries (DOF), although other agencies are also involved, including the marine police, navy and to a certain extent some agencies under the Ministry of Science and Environment. The MCS programme 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 developed 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 UNCLOS and to reflect international concerns.

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 is 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.

3.3 Myanmar

Fisheries in Myanmar could address the diversity in both marine and fresh water fisheries. According to MCS system, Myanmar DOF's main concern is controlling the unauthorized fishing 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 United Nations Convention on the Law of the Sea, specifically regarding the sharing of the surplus 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 the MCS capabilities, improving education programs and developing aquaculture as an alternative to capture fisheries.

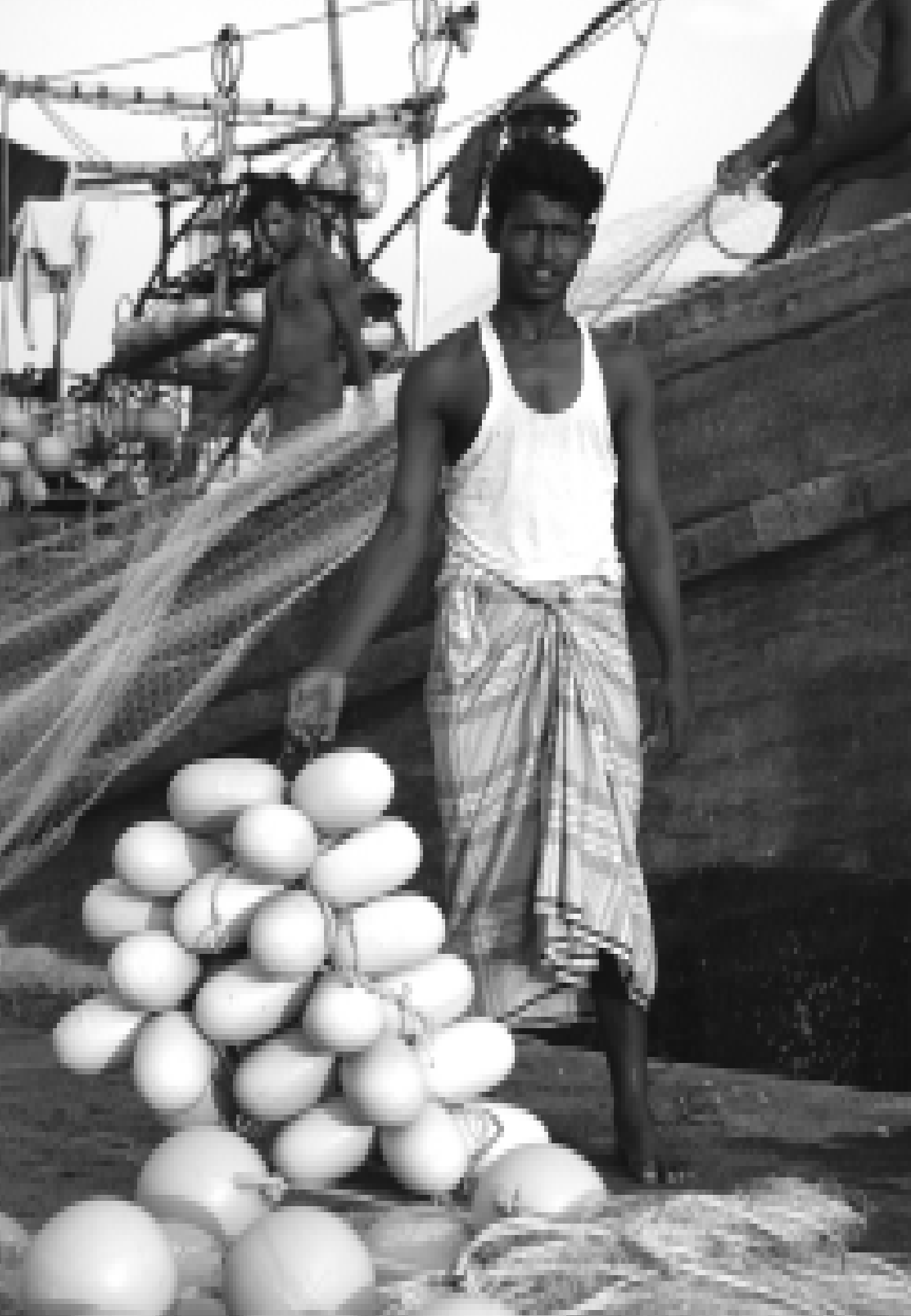
3.4 Indonesia

Basically the system of its MCS has been established to comply with the new regime of EEZ waters under the jurisdiction of the coastal states in Indonesia. However, in broad terms, the system of its MCS is relevant to dealing with fisheries resources management as a whole. Indonesia has adopted the system of MCS and gradually the concept and its implementation has been improved, according to the country's capability in terms of institutional requirements, manpower, coordination, etc.

Particularly in relation to surveillance and enforcement in Indonesia, there are a number of institutions involved including the Directorate General of Fisheries, Navy, Department of Sea Communication, etc. However, as the system of MCS is a new concept in Indonesian fisheries management, some teething problems have arisen such as the legal aspects of the MCS system are not yet fully ready, thus hampering effective MCS implementation. As MCS is new so most of the officials and people concerned have a limited understanding of the system, and there is the 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. Thus, there is need to enhance the supporting components including staff, facilities and budget and also to introduce a systematic framework or mechanism for effective coordination.

3.5 The 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 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 the 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.



3.6 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 gear, conflicts between many resource users, deterioration of coastal and marine environment, pollution, etc. Therefore, the Department of Fisheries of Thailand has to place more emphasis on coastal and marine fisheries. Three key regulations are given high priority in coastal areas. These include 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 coast 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 fishers.

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 gear 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 Department 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 fishers to comply with the fishery laws and regulations. These include campaigns aimed to increase the fisher and public awareness by providing information regarding fisheries conservation and management, fisheries laws, regulations and enforcement to fishers and their families; 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 the Thai fishers regarding responsible fisheries.

3.7 Vietnam

The marine resources of Vietnam are characterized by their multi-species nature. The characteristics of the fisheries resource distribution indicate 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. Therefore, MCS of fishing activities in Vietnam is essentially inshore in nature. This has led to the establishment of the country's Department of Protection of Marine Resources 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 Department and 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 activities are constrained. Moreover, the attention to protect the resources along the coast is still very concentrated. There are future plans and directions to manage the coastal fisheries through measures such as coastal areas planning, research programs, strengthening the protection of fisheries resource in coastal areas, enhancing people's knowledge and social/ cultural life of fishing communities, improving fisheries law, strengthening monitoring and enforcement, etc.

4.0 MCS 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 Asia region is facing increasing pressure on their fisheries resources from IUU fishing. In many cases, IUU operations rely heavily on the lack of MCS management. IUU 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. With reference to a workshop held in Bali, Indonesia from 4 to 6 March 2008, there are the recommendations and the appropriate plan of actions for the region which include to the following (for details please see Annex 1):

- 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 guide 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.

5.0 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 fisheries management and improve 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. With reference to the lessons learnt from countries in the region, it can be understood that no MCS activity 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 fishers. Thus, in combination

with MCS activities, measures such as establishing community-based fishery management, providing information to increase awareness among fishers and their families on 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 fishers to operate more responsibly in the long run and can make the MCS system become more effectively.

6.0 References

Arcamo, S.V.R., *et al.* 1998. The Philippines fisheries monitoring, control and surveillance system. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998.

Aung, K. and Oo. K.M. 1998. Fisheries in the Union of Myanmar. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998.

Chiem, N.V. 1998. Vietnam – Sustainable exploitation and protection of fisheries resource and the environment. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998.

Everett, G.V. 1998. Overview of issues of concern to fisheries monitoring control and surveillance in South and Southeast Asia. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998.

Fisheries monitoring, control and surveillance in Thai waters. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998.

Flewwelling, P. 1995. An introduction to monitoring, control and surveillance for capture fisheries. FAO Fisheries Technical Paper No. 338. Rome. 217p.

Martosubroto, P. 1998. Marine fisheries of South and Southeast Asia: A review of the resources and the need for monitoring control and surveillance. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998.

Southeast Asian Fisheries Development Center. 2003. Regional Guidelines for Responsible Fisheries in Southeast Asia: Responsible Fisheries Management. Thailand.

Southeast Asian Fisheries Development Center. 2003. Regional Guidelines for Responsible Fisheries in Southeast Asia: Responsible Fisheries Operation. Thailand.

Summary Report: Workshop on Monitoring, Control and Surveillance for the Implementation of the Regional Plan of Action to Promote Responsible Fishing Practices including Combating IUU Fishing in the Region (RPOA). Bali, 4-6 March 2008.

Thuok, N., Korn, L., and Chenda, T. 1998. Fisheries monitoring, control and surveillance in Cambodia. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998.

Wan, T.S. 1998. Monitoring, control and surveillance of fisheries in Malaysia. Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998.

Widana, K., Hutabarat, S.M.P., Yulianto. 1998. Present status of fisheries management in relation to fishing control in Indonesia. Country and regional papers presented at the Regional Workshop on Fisheries Monitoring, Control and Surveillance, Kuala Lumpur and Kuala Terrangganu, Malaysia, 29 June-3 July 1998.

Annex 1

The Regional Plan of Action (RPOA) to Promote Responsible Fishing Practices including Combating IUU Fishing in the Region

South China Sea (Gulf of Thailand)

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
General needs		Need to understand: - vessels (flags, countries of origin, ownership). - catches. - Trans-boundary landing and or transshipment activities by port and/ or types of vessels. - Destinations of catches. - Operation nature and extent of all fishing activities.	
Poor past management resulting in depleted/ over-fished stocks.	Lack of management and lack of monitoring, control and surveillance.		
Depleted/ over-fished local fish stocks leading to migration of fishing effort to other areas within or into other sub-regions			
Multiple-species fisheries	*Focus is more on effort rather than on species*	Need sub-regional arrangements on the control of fishing effort (boat and people)	
Unreported and misreported catch from licensed vessels.	- *Flag and control State to develop and establish observer schemes.* - *State to develop and establish monitoring mechanisms at landing sites and ports.* - *Develop observer programes to verify reported catches.*	- Lack of institute contact and information sharing. Need cooperative and relationships and MCS networks amongst sub-regional countries. - Need cooperation on catch monitoring between flag Stages and coastal States.	

Note: Text in italics indicates action

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
	- *Flag/neighboring State monitoring and reporting of catches.* - *Monitoring of catches by coastal State within their EEZ.*		
Unregulated landing by vessels in/ from neighboring countries	- Look for ways of monitoring local landing by non national vessels		
"Fraudulent" registration activities. "Fraudulent" licensing schemes.	- Lack of adequate licensing and registration data on vessels: - *Follow up on institutional responsibilities for registration and licensing respectively.* - *Indicate levels by state to provide "flags" for vessels to fish beyond their own EEZ.* - *Indicate levels of flag State licensing of vessel fishing beyond their own EEZ.*		
Unauthorized transfer, and copy of licenses between fishing vessels.	- *Establish licensing procedures that enable verification of license against vessel to address fraudulent use.*		
Large migration of fish workers and unknown procedures for recruitment and transfers of crew.	- Lack of information on migratory crews/ fish-workers involved in fishing and means of recruitment.		
Limited capacity within relevant government agencies to effectively implement MCS.	- *Explore integrating and coordinating national surveillance assets across agencies for MCS.*	*Explore cooperative sub-regional MCS mechanisms that allow for integrating and coordinating surveillance assets building on the monitoring and control efforts.*	
Stakeholder engagement in MCS and general fisheries management.	Lack of industry engagement in MCS implementations - *Develop cooperative programs with stakeholder to support stakeholder monitoring*		

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
	and reporting of suspicious activities. - *Explore cooperation with industry associations &NGOs.*		
Impacts on shared/ migratory fish stocks access region, including that of incidental catch of endangered species.	- *Further develop sub-regional initiatives to manage fisheries, including shared/migratory fish stocks and in the process engage with relevant regional and global organization.*		- Poor regional cooperation on migratory fisheries, fishing boats and fish workers. - Lack of engagement by members in relevant organization. - *Promote engagement in relevant fisheries organizations.*
Unauthorized/unregulated fishing.	- *Develop data collection mechanisms.*	- *Build cooperative mechanism to share information on unregulated fishing.*	- *Explore harmonization of management measures for shared/ migratory fisheries.*
Ongoing processes for defining maritime boundaries.		Continue ongoing discussions/ negotiations and some agreements reached.	

Sulu/ Sulawesi

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
Large number of unregulated pump boats. Unreported and misreported catches from both licensed and illegal fishing vessels. Lack of accurate data on fish stocks.	- *In accordance with RPOA, develop and establish port monitoring mechanism.* - *Develop mechanisms to monitor catch and fishing vessels activities.* - *Develop data collection mechanisms.* - *Develop and establish mechanism to authorize fishing vessels.* - *Establish catch logbook monitoring and reporting programs.* - *Establish VMS schemes.* - *Develop observer programmes to verify reported.*	Need to understand vessels, catches, destinations of catches, operational nature and extent of all fishing activities. - Lack of institutional contact and information sharing. Need cooperative relationships and MCS networks amongst sub-regional countries. - Need cooperation on catch monitoring between flag state and coastal State. - *Develop sub-regional cooperation to address small-scale fishing issues.* - *Establish information sharing mechanisms for catch and effort data.* - *Further development of the process on identifying and managing traditional vessels and their activities.* - *Develop cooperative mechanism to enable exchange of information on authorized fishing.* - *Develop observe programmes to verify reported catches.* - *Establish cooperative mechanisms to share information on signing and arrests of illegal fishing vessels.* - *Establish sub-regional database of fishing and transshipment vessels that includes vessel Id, type of vessels and history of activities.* - *Develop sub-regional harmonized observer scheme across sub-region that allows sharing of observers.* - *Explore sub-regional VMS scheme that allows for sharing of VMS data for MCS purposes.* - *Explore sub-regional cooperative boarding and inspection regime similar to FFA Niue Treaty.*	- Port cooperation on information sharing. - *Develop information sharing mechanisms and protocols for port data.* - *Develop cooperative mechanisms to enable exchange of information on authorized fishing vessels.* - *Explore harmonization of management measures applying on shared and migratory fisheries vessels.*

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
		- *Build cooperative mechanisms to share information on unregulated fishing.*	
Largely unknown and unregulated transshipping activities operating through variously flagged vessels.	- Establish monitoring procedure for transshipments. - Establish port monitoring and verification of landings of potential IUU catch by fishing vessels and transshipment vessels.	Need to understand transshipment and fishing vessels, transshipment catches, transshipment activities and operations, and destination of catches. - Lack of institutional contact and information sharing. Need cooperative relationships and MCS networks amongst sub-regional countries. - Need cooperation on transshipment monitoring. - *Develop information sharing procedure for surveillance of fishing and transshipment vessels.*	- Develop information sharing procedures for port data.
Unauthorized use/ transfer of one license between multi fishing vessels.	- Develop and establish effective licensing and effective fisheries management systems. - Establish licensing procedures that enable verification of license against vessels to address fraud. - Develop and establish mechanisms to authorize fishing vessels.		
Unknown activities relating to transfers of crews.	Lack of flag State information on crews.		
Fraudulent licensing and registration activities.	- Lack of adequate licensing and registration data on vessels. - Confirm levels of flag Stage licensing of vessels fishing beyond their own EEZ. - *Develop and establish effective licensing and effective fisheries management systems.* - *Establish licensing procedures that enable*		

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
	verification of license against vessel to address fraud. - *Develop and establish mechanism to authorize fishing vessels.*		
Limited capacity within relevant government agencies to effectively implement MCS.	- Explore integrating and coordinating national surveillance assets across agencies.	- Explore cooperative sub-regional MCS mechanisms that allow for nitrating and coordinating surveillance assets.	
Lack of stakeholder engagement in MCS and general fisheries management.	- Develop cooperative programs with stakeholders to support stakeholder monitoring and reporting of suspicious activities. - Explore ooperation with industry associations and NGOs		- Explore cooperation with industry associations and NGOs.
Illegal fishing by foreign nationals.			
Illegal fishing by nationals from neighboring RPOA.	Consider, and develop as appropriate, affective mechanism for control of nationals.		
Sophisticated illegal fishing tactics that utilize flags/nationals from both members.			
Illegal catch landings in unauthorized ports.			
Illegal toxic Fishing practices.			
Impacts on migratory fisheries across region including over-fishing on spawning ground for tuna.	*Engage with relevant regional and global or ganizations in accordance with UNFSA and RPOA.*		- Poor regional cooperation on migratory fisheries. - Lack of engagement by members in relevant organization.

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
On going process for defining maritime boundaries.		No interim arrangements to enable MCS while maritime boundaries are negotiated.	
Over-fishing	Limited institutional arrangements.		Failure of fisheries governance at national levels.
Poor past management resulting in depleted & over-fished stocks.	Lack of management and MCS.		
Depleted/over-fished local fish stocks causing capacity migration into other sub-region.			
Multi-species fisheries			

Timor/ ARAFURA

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
Large number of various flagged fishing vessels operating in Arafura/ Timor including: - Authorized national small scale fishing vessels operating in Arafura/ Timor; - Authorized national large-scale fishing vessels operating in arafura/ Timor; - Unauthorised national fishing vessels operating in Arafura/ Timor; - Unauthorized foreign fishing vessels operating in Arafura/ Timor.	- *In accordance with RPOA, develop and establish port monitoring mechanisms.* - *Develop and establish mechanisms to authorized fishing vessels.* - *Establish catch logbook monitoring and reporting programs.* - *Develop mechanisms to monitor catch and fishing vessels activities.* - *Establish VMS schemes.* - *Develop mechanism to monitor catch and fishing vessels data collection mechanisms.* - *Develop observer programs to verify reported catches.*	Need to understand: - Vessels, catches, destinations of catch, operational nature and extent of all fishing activities. - Lack of institution contact and information sharing. Need cooperative relationships and MCS networks amongst sub-regional countries. - Need cooperation on catch monitoring between flag States and coastal States. - *Further development mechanisms to enable exchange of information on authorized fishing vessels.* - *Establish cooperative mechanisms to share information on sightings and arrests of illegal fishing vessels.* - *Establish information sharing mechanism for catch and effort data.* - *Establish sub-regional database of fishing and transshipment vessels that included vessels Id. Type of vessels, history of activities.* - *Develop sub-regional harmonized observer scheme across sub-region that allows sharing of observers.* - *Explore sub-regional cooperative boarding and inspection regime similar to FFA Niue Treaty.* - *Build cooperative mechanisms to share information on unregulated fishing.*	- Cooperation on port information sharing. - *Develop information sharing mechanisms and protocols for port data.* - *Develop cooperative mechanisms to enable exchange of information on authorized fishing vessels.* *Explore harmonization of management measure applying to shared and migratory fisheries.*
Unreported transshipping activities operating through	- *Establish monitoring procedures for transshipments.*	Need to understand : - Transshipment and fishing vessels (flags,	*Develop information sharing procedures for*

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
variously flagged vessels.	- *establish port monitoring and verification of landings by fishing vessels and transshipments vessels.*	country of origin, ownership); - Transshipped catches; - Transshipment activities and operations; - Destinations of catches; Lack of institutional contact and information sharing. Need cooperative relationships and MCS networks amongst sub-regional countries. Need cooperation on transshipment monitoring. *Develop information sharing procedures for surveillance of fishing and transshipment vessels.*	*port data (i.e. catch landings, trade patterns).*
Unauthorized use/ transfer of one license between multiple fishing vessels.	- *Develop and establish effective licensing and effective fisheries management systems (inc. legislation).* - *Establish licensing procedures that enable verification of license against vessel to address fraud (i.e vessel marking & ID).* - *Develop and establish mechanisms to authorize (as distinct from registration and licensing) fishing vessels.*		
Unregulated bunkering.			
Unknown activities relating to transfers of crews.	Lack of flag State information on crews (has port State ramifications).		
Unreported and misreported catches from both licensed and illegal fishing vessels.	- *Develop observer programmes to verify reported catches.*		
Fraudulent licensing and registration activities.	Lack of adequate licensing and registration a data on vessels. - *Develop and establish effective licensing and effective fisheries management systems (inc. legislation)*		

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
	- *Establish licensing procedures that enable verification of license against vessel to address fraud (i.e. vessel marking & ID).* - *Develop and establish mechanism to authorize (as distinct from registration and licensing) fishing vessels.*		
Lack of stakeholder (*i.e.* industry) engagement in MCS and general fisheries management.	- *Develop cooperative programs with stakeholders to support stakeholder monitoring and reporting of suspicious activities.* - *Explore cooperation with industry associations and NGOs (i.e. INFOFISH, MCS).*		*Explore cooperation with industry associations and NGOs (i.e INFOFISH, MSC)*
Limited human and institutional capacity within relevant government agencies to effectively implement MCS.	- *Explore integrating and coordination- ting national surveillance assets across agencies (i.e. Navy, Customs, Air Force, Police,Fisheries).*	- *Explore cooperative sub-regional MCS mechanisms that allow for integrating and coordinating surveillance assets.*	
Illegal fishing by foreign nationals.			
Illegal fishing by national from other RPOA members.			Consider, and develop as appropriate, effective mechanisms for control of nationals.
Impacts on shared/ migratory fish stocks (including other associated and dependent species such as sea turtles, sharks, seabirds…) Across region.	- *Engage with relevant regional and global or ganizations in accordance with UNFSA and RPOA*		Poor regional cooperation on migratory fisheries. Lack of engagement by members in relevant organizations.

Sub-regional issues	Need/ Gaps		
	National	**Sub-Regional**	**Regional**
Unregulated fishing	- *Develop data collection mechanisms*	- *Build cooperative mechanisms to chair information on unregulated fishing (particularly in regard to shared/migratory fisheries and issues with capacity migration from depleted fisheries).*	- *Explore harmonization of management measures applying to shared and migratory fisheries.*
Over fishing	Limited institutional arrangements.		Failure of fisheries governance at national levels.
Poor past management resulting in depleted/ over fished stocks.	Lack of management and MCS.		
Depleted/ over fished local fish stocks causing capacity migration into other sub-region.			
Multiple-species fisheries.			

GoB/DANIDA/BOBP-IGO National Workshop on
Monitoring, Control and Surveillance in Marine Fisheries – Bangladesh
Cox's Bazaar, Bangladesh, 7 – 8 June 2008

The Status of Coastal and Marine Fishing Fleet in Bangladesh and Preparedness for a Monitoring Control and Surveillance Regime

Md. Giasuddin Khan [1]

1.0 Background

The coastal and marine fishers of Bangladesh land around half a million tonnes of fish a year involving about one million people operating an estimated 22 500 non-mechanized and 21 400 mechanized fishing boats and also a significant industrial trawler fleet targeting shrimp and finfish on the continental shelf. This production forms about 22 percent of the national fish production. The potential of the coastal fisheries sector has not been rationally harvested. Rather the resources have been over-exploited due to irrational and uncontrolled expansion of the fishing fleet and as a result the fish stocks have declined.

Overfishing and stock decline and its future consequences have been identified and reported back in the early nineties with a set of recommendations for management of the overcapacity (FAO/BOBP-DoF). The Government of Bangladesh (GoB) appreciated the recommendation realizing the fact that preventing the decline in fish stocks and its consequences on the livelihoods will require a significant shift in the way that all coastal fisheries are regulated at the Upazila and District levels. This appreciation was reflected through the implementation of the model project named Empowerment of Coastal Fisher Community for Livelihoods Security (ECFC) in one District with the assistance of FAO/UNDP in recent years.

The strong willingness of the Ministry of Fisheries & Livestock (MoFL) and the Department of Fisheries (DoF) was reaffirmed through undertaking a review of the sector while producing a 'marine fisheries sector sub-strategy' (DoF, 2006) as part of a wider National Fisheries Strategy and action plan. In spite of all these the coastal marine fisheries has gone uncontrolled, except some limited interventions, and this has worsened the crisis the sector is facing today. The GoB also considered the need for decentralization of the Monitoring Control and Surveillance (MCS) programme, which was reflected through the promulgation of the executive order where the power of the coastal fisheries MCS was delegated to the District Fishery Officers (DFOs) of the coastal Districts. But in the absence of technically capable marine fisheries staff at District and Upazila levels, the system did not work. So, provision for reorganizing and strengthening of the DoF marine wing at the District and Upazila levels were kept in the future action plans of the 'marine fisheries sector sub-strategy'.

The fisheries sector is now passing through a serious crisis particularly in respect of availability of tiger shrimp brood stock to support the large number of shrimp hatcheries that produce shrimp seed for the big and 100 percent export oriented coastal shrimp culture industry. There have been serious conflicts amongst the different sections of the coastal fishing communities. Following serious conflicts in the sector during 2006-2007, the MoFL has formed a high powered 'Committee on Marine Fisheries' that have met a number of times to find ways to combat the crisis. Since information was too old to make decision on the

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conflicting issues, the GoB requested the WorldFish Center to undertake a study and suggest measures to mitigate these conflicts and also to suggest precautionary approaches in line with the FAO/UN Code of Conduct for Responsible Fisheries (FAO-CCRF).

The WorldFish Center undertook a short study and through this it has not only confirmed that the fish stocks are still in the process of decline, it has rather emphasized that the rate of decline has been faster during the last few years. The report added that if unchecked, it is highly likely that recruitment of many key commercial species will collapse, having a substantial impact on all coastal fisheries and the livelihoods and food security. It has made a set of recommendations for precautionary management approach, while a detailed study and research for fine tuning the management process is recommended.

In 1995, FAO CCRF details the principles and criteria for responsible fishing. It serves as a reference document to assist member states in developing national policies for sustainable fisheries and supporting these with robust legal and institutional frameworks. However, despite being a signatory, Bangladesh is yet to implement its own Code of Conduct.

There has also been a DANIDA supported ASPS II Project of the DoF, which is planning a scoping mission to review and support the implementation of the goals set out in the marine fisheries sector 'sub-strategy', taking into consideration the study results and recommendations made by the WorldFish Centre for precautionary management measures.

2.0 Status and trend of fishing

2.1 Overview

Of the total marine fish production about 90 percent is landed by artisanal fishers. Management of coastal fisheries in Bangladesh has focused predominantly on industrial trawler fleets, with limited attention being paid to other sectors. This has led to uncontrolled expansion of fishing effort, which has landed the sector in crisis. Artisanal fishing has already become non-remunerative. The poor fishers are putting more and more nets of fine mesh to survive, which exerts excessive pressure on the fish stocks and increasingly catching less valued and under-sized fish and as a result fish stocks are declining at a faster rate.

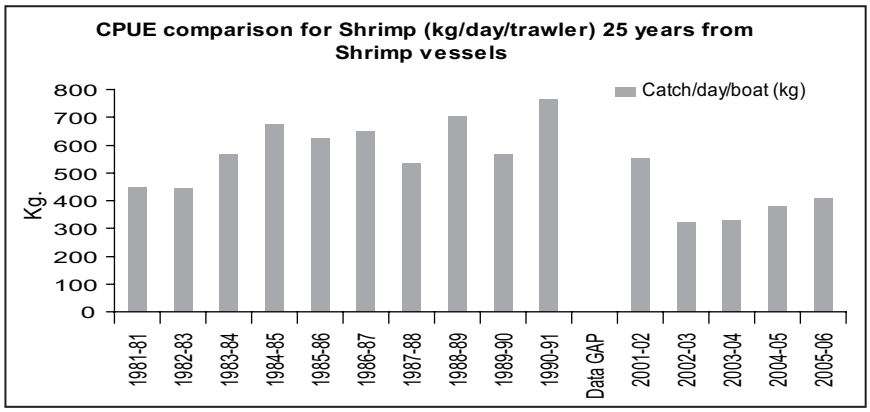
2.2 Immediate issues of concern

2.2.1 Industrial trawlers

Penaeid shrimp decline: Catches of adult penaeid shrimps as brood stock for the coastal aquaculture industry have declined in terms of CPUE (50% reduction since 1987, Figure 1) and size (22% reduction over the past five years). This has resulted in the trawl industry expanding its operations into inshore waters (*i.e.* from the 40m depth contour to as shallow as 20m) to maintain catches.

The shrimp and finfish catches have declined in both absolute terms as well as in terms of their overall contribution of catch and foreign currency earnings to the country. Furthermore, the bottom trawl fishery has a damaging affect on the benthic habitat and has very high discard rates. There is therefore an argument that the benefits of trawling are limited whilst the ecological costs are high and will impact many small-scale fishers. Given that the trawl industry is artificially supported through fuel subsidies, its true economic value is doubtful. Regarding the role of the trawl industry in *Penaeus monodon* brood stock collection, it is thought that this could be transferred to a trammel net fishery that is much more selective and has lower shrimp mortality rates.

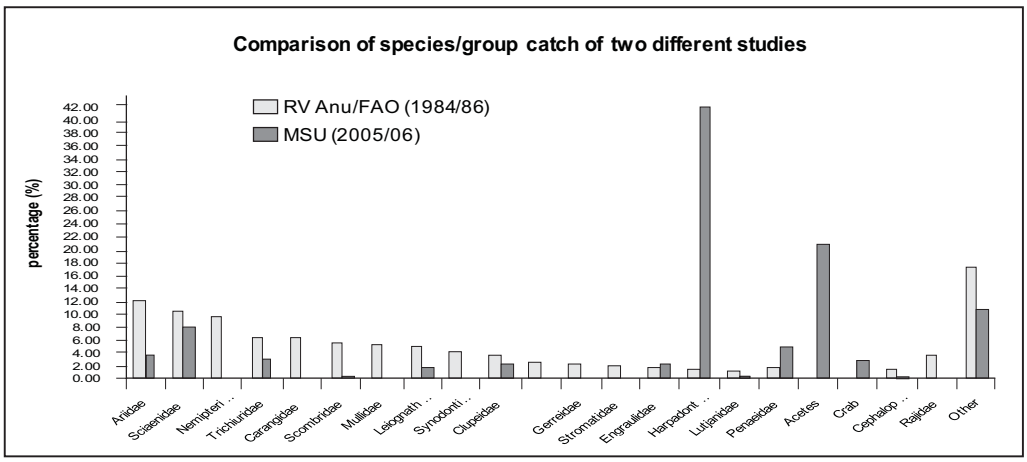
Figure 1: CPUE of shrimp trawler fleet for the last 25 years, since 1981



(Based on the data collected from commercial trawlers by the Marine Survey Unit of DoF Chittagong (ref: BOBP/DoF WP 1993), DoF-MSU 2007 and shrimp trawlers composition – changes over last twenty five years- based on the commercial data analyzed and reorganized by WorldFish study group in November 2007)

Changes in finfish composition of finfish trawlers: The effort in finfish trawling has increased gradually with the inclusion of the trawlers under 'trial trip' and new licenses given recently. Over the last 20 years there has been a big shift in the composition of catches of the finfish trawlers. Catches during the 1984-1986 period showed that the major commercials were white grunters, croakers, catfish, breams, snappers and hairtails. Since 2005-2006 these have mostly been replaced by the low valued species like acetes shrimp, crab juveniles and the Bombay ducks (Figure 2).

Figure 2: Bottom finfish trawl catch composition (1984-1986 and 2005-2006)



2.2.2 Commercial fisheries

The declining CPUE (650 kg/ day/ boat in 2001-2002 to under 100 kg/ day/ boat in 2005-2006) from small mesh gillnet vessels targeting hilsa, skipjack tuna and mackerel is alarming. One target species of the large mesh gillnet– the Indian salmon (*Polynemus indicus*) – is now almost extinct in Bangladesh waters. Whilst these nets are reasonably selective, the number of fishers has expanded considerably from 6 389 in the late 1980s to 26 169 in 2000, yet the

annual catch per vessel dropped from 41 tonnes to 7 tonnes over the same period (Banks, 2003). The catch rate from marine set bag nets has also dropped from 85 kg per haul in 1985 to 24 kg/ haul over 2002-2004. Meanwhile the number of units expanded from 3 086 to 21 000 units. The WorldFish study report (WorldFish, 2007) has described this in detail. The following figures (Figures 3 and 4) for example give an impression about the catch drop and its consequences on the livelihoods.

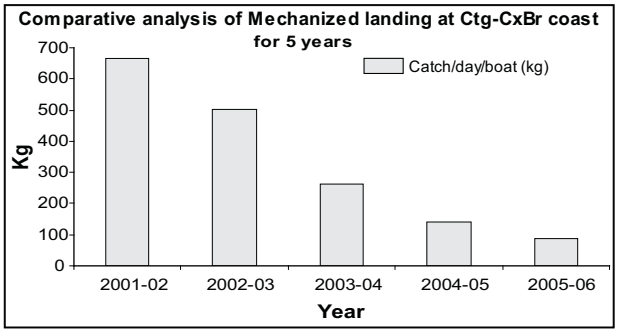
2.2.3 Artisanal fisheries

High degree of non-selectivity of many artisanal fishing methods: Some widely used fishing techniques such as estuarine set bag nets, push nets and bag nets have extremely high catches of juvenile finfish and crustaceans. Many of these are driven by the demand for wild post-larvae (PL) for coastal aquaculture, despite a Government ban and increasing hatchery production. In the SW districts of coastal Bangladesh, for every one PL caught, 360 organisms are discarded with unknown mortality – this is likely to have a significant impact on recruitment of migratory species and their predators. The number of ESBNs used have expanded from 11 674 in 1989 to 53 540 in 2001 (the present number are unknown) whilst catch rates have dropped from 18 kg/ haul in 1987 to under 10 kg/ haul in 2007 (Figures 5).

2.2.4 Multi-species fisheries and trophic levels

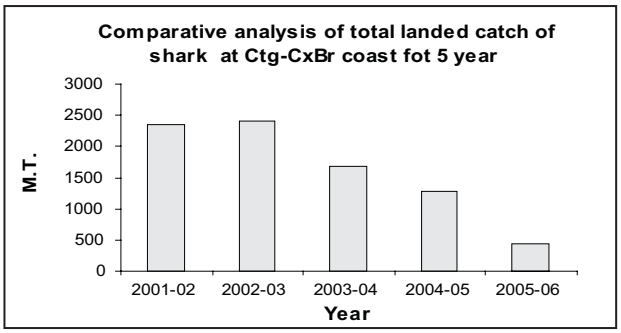
Changing trophic state of multi-species finfish trawling: The catch rate of more valuable demersal

Figure: 3. Mechanized boat landing over last five years



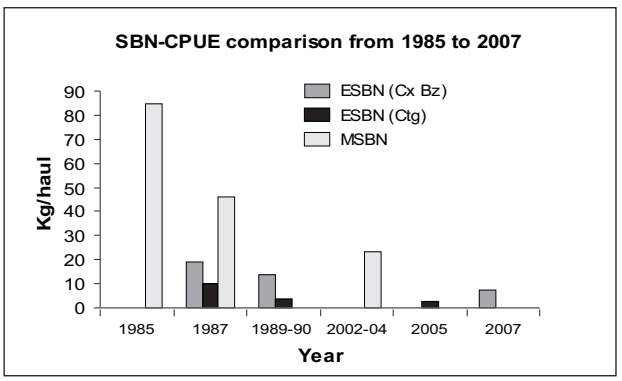
(Source: Huntington et. al, 2007)

Figure 4: Comparative analysis of total landed catch of shark



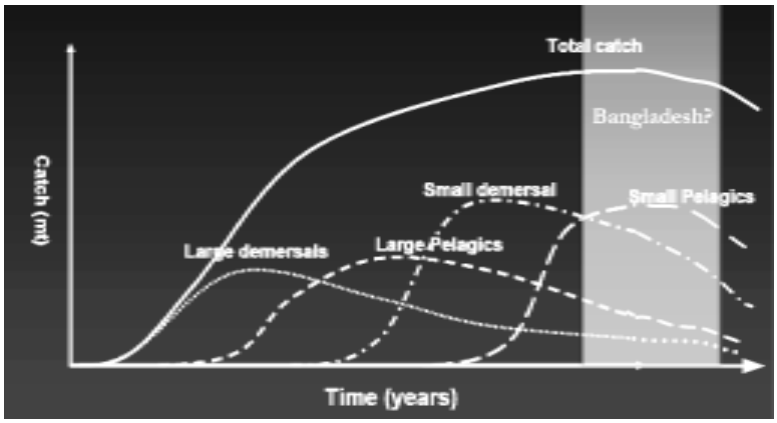
*(Source: Huntington et. al, 2007***)**

Figure 5: CPUE of different types of set bag nets



Source: Adapted from ECFC/BFRI (2005) for MSBN & WorldFish Primary data from ESBN fishery (2007) in Huntington et. al (2007)

Figure 6: Fishing down the food chain– the status of marine fisheries in Bangladesh?



Source: In Huntington et. al (2007), as adapted from Simon Funge-Smith (2007)

species such as croakers and pomfrets has declined against a gain in less valuable, small species such as Bombay duck and *acetes* shrimp. In addition, the biodiversity has also declined – in 1984-1986 surveys there were 20 species contributing to the main catch, whilst in 2005-2006 this has declined to 12. This indicates that the more valuable and longer-lived species are being fished out and being replaced by smaller, short-lived pelagic fish (see Figure 6). A recent report in *Science* (Jørgensen *et. al*, 2007) suggests that these shifts are difficult to reverse and have long-term implications for ecosystem structure and function – and their human dependents.

3.0 Precautionary Management approach

3.1 Background to precautionary approach

The precautionary approach to fisheries management was first advocated at the UN Conference on Straddling Stocks and Highly Migratory Stocks (New York, 1992-1995). Essentially it assumes that all fishing activities have environmental impacts, and that these are negative until proved otherwise (FAO, 1996).

Management according to the precautionary approach exercises prudent foresight to avoid unacceptable or undesirable situations, taking into account that changes in fisheries systems are only slowly reversible, difficult to control, not well understood, and subject to change in the environment and human values.

3.2 Precautionary Management Measures

Marine capture fisheries must be conducted in a manner that does not lead to over-fishing. Presently, there is a clear indication of overcapacity. The destructive fisheries must be phased out and replaced by eco-friendly and economically feasible methods. In one study it was shown that this effort needs to be reduced by at least 50 percent. Pending the results coming from detailed survey after five years, when there may be point of no return, fishing effort and mesh control must start now. It may be fine tuned later on when more information is at hand. The management plans should, using the precautionary principle where necessary, develop the following:

- *Overview of the fishery:* participants, location, landings/ markets/ value, consultative process, management approaches, international considerations.

- *Stock status:* biology, environment, habitat, species interactions, stock assessment, research and prospects.
- *Management objectives for the fishery:* establishment of reference points (target and limit[2]) for key measurable indicators such as spawning stock biomass, spatial distribution, age structure, recruitment, by-catch levels, fishing capacity, etc.
- *Decision rules:* a series of decision rules based upon the management objectives of the fishery and more particularly, on pre-established reference points. In effect, allows fisheries managers to say what action should be taken when a certain indicator level is reached *e.g.* when the number of boats in the fishery reaches *x*, no further licenses will be issued for a period of *y* months or when the spawning stock biomass reaches the reference limit, the fishery will be closed for *z* months.
- *Current management measures:* established for the short-term and reviewed periodically *e.g.* annually, might include fishing seasons, closed areas, quota allocations, licensing restrictions and other relevant elements.
- *Enforcement strategies;* (prioritization of MCS issues to develop objectives and strategies, including surveillance techniques at sea, land and air, enforcement of technical measures *e.g.* mesh sizes, by-catch reduction methods, observer trips, and awareness building and education.

Fishing operations must be managed to minimize their impact on the structure, function and biological diversity of the system. Risks of change to the marine ecosystem that are not potentially reversible over two or three decades must be minimized.

4.0 Monitoring, control and surveillance (MCS)

4.1 Marine fish catch monitoring:

Considerable support and development needs to be given to marine catch monitoring. Catch, discards and landing data, including basic biological parameters (*e.g.* fish length frequency distribution) will be essential. Development of local reporting systems, especially for artisanal fisheries, should be developed through co-management structures and mechanisms. The impacts – in terms of both reducing fishing mortality and ecosystem impacts as well as socio-economic impacts on livelihoods – should be monitored and the results used in periodic review.

4.2 Marine fishing effort control:

The harvesting and processing capacity should commensurate with estimated sustainable levels of resource and that increases in capacity should be further constrained when resource productivity is highly uncertain.

Input controls: the impact of a fishery can be reduced through limits to capacity and effort[3]:

- ***Capacity limitation*:** Initially based upon currently available trends and indicators, upper limits in terms of vessel numbers and individual fishing power should be determined for all the key commercial fleets, including both static and mobile gear types. Over the longer-term, these should be refined based upon the relevant Fisheries

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[2] *The target reference point is the desired state of the indicator and the limit reference point is the boundary beyond which it is undesirable to go.*

[3] *The total amount of fishing activity on the fishing grounds over a given period of time, often expressed for a specific gear type or métier e.g. number of hours trawled per day.*

Management Plans or other targeted research. If appropriate, fishing capacity could be utilized as a reference indicator, with both capacity targets and limit points set and appropriate management responses agreed.

- ***Effort limitation*:** The ability to restrict the activities of fleets and thus reduce fishing mortality of all species involved means that this is a particularly suitable method of reducing the effort of multi-species fisheries. Mechanisms can include *limiting days at sea* (usually for industrial and multi-day commercial vessels), *effecting closed seasons* for some or all gear, *closing off designated areas* during critical periods and *zoning certain activities* to particular areas.

4.3 Surveillance

Mechanisms should be put in place to maximize the selectivity of fishing gear and fishing operations and minimize waste, discards, catch of non-target species and the impacts on associated or dependent species.

Greater consideration should be given to the use of more selective fishing gear through a combination of technical measures (minimum mesh sizes, net materials, the use of by-catch reduction mechanisms or other restrictions), by-catch conditions (*e.g.* non-target catch cannot exceed x percent of the total catch), discarding rules (*e.g.* all discards must be landed and declared) and zoning.

Such technical measures should be supported by appropriate legislation that is easily understood and if possible supported by fishers and also practical to enforce. In order to ensure fishers do not infringe rules and regulations governing catch reporting, no fishing areas, technical measures and other restrictions on fishing activities, the national capacity for MCS should be greatly improved.

4.3.1 Licensing and vessel registration

It is recommended that the registration of all mechanized boats, fixed engines[4], is completed as a matter of urgency. The information should be stored on a query-enabled, fully updatable computerized database. In time, this system should be allowed to be interrogated and updated directly by DoF personnel at District level, probably though the internet. Registration and licensing information should provide sufficient information on vessel size and capacity, gear used, etc in order to allow a full understanding of the fishing capacity for different métiers and geographic regions.

4.3.2 MCS for industrial and larger-scale commercial fleets

Given the limited capacity to mount sea-borne inspection, it is recommended that efforts are focused on land-based inspection. Possible mechanisms for consideration might include:

- The designation of specific ports for landings from the larger vessels (trawlers and larger commercial gillnetters) to facilitate catch and gear inspections.
- Extending the current trawler logbooks scheme to (i) include detailed by catch and discards data and (ii) to the larger commercial gillnetters landing at designated ports.
- Developing a fisheries observer programme for sampling onboard the industrial and commercial fleets.

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[4] *Any net, implement, engine or device, fixed to the ground or secured by one or more anchors or by any other means, and used solely for the purpose of taking or facilitating the taking of fish.*

- If gear and spatial conflicts continue to occur between larger vessels, and infringements in either no fishing areas or those zones restricted for particular fleets, then a satellite-based vessel tracking and monitoring system (VTMS) might be considered.

4.3.3 MCS for artisanal fleets and smaller commercial vessels

The artisanal fleet is widely dispersed around an often inaccessible coastline and notoriously difficult to monitor and control. It is recommended that the limited district-based DoF inspection capacity is improved and bolstered through community-level policing, possibly through co-management structures. Here too capacity-building will be important, together with developing awareness and understanding, consensus and promoting peer-pressure mechanisms.

5.0 Longer-term management and development issues

5.1 Fisheries management

5.1.1 Unlimited and expanding fishing capacity

As can be seen from the summary in the previous section, one of the key problems is the rapid expansion of fishing effort – for instance the number of mechanized fishing boats has increased from just 41 in 1968 to 25 379 in 2006. This allied with the non-selectivity of the shrimp trawl, ESBN and estuarine push nets, has been a major contributor to the critical condition the coastal and marine capture fisheries in Bangladesh now find itself in.

5.1.2 Outdated fisheries management mechanisms, regulation and rules

Since the publication of the last Marine Fisheries Ordinance in 1983, there has been little real change in the fisheries management regime, either in terms of the technical measures adopted nor the rules and regulations being applied. This situation has been further complicated by the resistance of trawl fishing association on a number of occasions.

5.1.3 Low level of monitoring, control and surveillance

The ability of DoF to enforce fisheries regulations is limited by the geographic isolation of many coastal fishing communities, a lack of physical assets such as patrol boats and a chronic shortage of trained manpower.

Many of the issues summarized are well known. The 2006 Marine Fisheries Sector Sub-strategy addresses many of these, and the 1998 National Fisheries Policy (NFP) is soon to be updated. There is now a real opportunity to address these issues and to ensure a sustainable contribution to coastal livelihoods and national food security.

5.1.4 Fisheries and ecosystem management

The objectives of the 1998 NFP is to enhance fisheries production and to achieve economic growth through earning foreign currency, although there is recognition of the need to "maintain ecological balance". These need to be updated to include a wider ecosystem approach and to reflect the recently approved objective of the marine Fisheries Sector Sub-Strategy[5] .

[5] *"Ensuring the sustainable management of the marine sector through the allocation of fishing rights and its management to communities and relevant fishing groups and by providing the regulatory framework for this management" (DoF, 2006).*

5.1.5 Resource allocation and access rights

The Marine Fisheries Sector Sub-Strategy emphasizes that a priority issue is to clarify whether fisheries resources should be used to maximize sustainable production or to provide employment and a sustainable livelihood to the largest number of people. It refers to the NFP, 1998, where it is clearly stated under article 8.3 "More priority on small-scale fisheries sector", a sentiment in line with the 'National Strategy for Economic Growth, Poverty Reduction and Social Development' (GoB, 2003). This suggests that access rights for the artisanal sector in particular be safeguarded through appropriate management mechanisms, as well as the productive gillnet and emerging longline métiers, both of which operate at relatively small-scale but operate further offshore than the artisanal fisheries. It then presupposes that large-scale, industrial techniques *e.g.* trawling, purse seining should only be permitted if there is a sufficient and independent[6] portion of the resource remaining.

5.1.6 Co-management of small-scale fisheries

One of the challenges to marine capture fisheries management is the potential contribution of decentralized co-management, especially for the small-scale fisheries elements of the sector. This is recognized as an appropriate approach by the 'Marine Fisheries Sector Sub-Strategy[7]' (DoF, 2006). Policy objectives could include:

- Fisheries sector planning and management should be participatory, consultative and transparent.
- Community and fisher involvement in local area management should be facilitated through the development of co-management mechanisms appropriate to the local conditions. Where necessary, capacity-building of community-based institutions should be encouraged to ensure a balanced partnership between Government and civil society.
- Co-management processes will be supported through an appropriate legislative environment providing for community use rights, through institutional strengthening of community-level organizations, through clear definition of management boundaries and responsibilities, etc.
- Management approaches should provide incentives to both mitigate risk and adapt under changing scenarios, explicitly in the face of external shocks, *e.g.* the recent catastrophic event of Cyclone Sidr.

Community-based management has proved to be successful in the inland fisheries of Bangladesh and both regional and international experience suggests that models could be adapted for use in the coastal fisheries. This has been proved during implementation of the ECFC project. Attempts are needed to develop and institutionalize the community-based fisheries management model (as established by the CBFM 2 Project, DoF/ WorldFish).

5.2 Fisheries Research

Decision-making in fisheries management should be supported by sound scientific information. Where this information is lacking, precautionary measures should be developed and subsequently refined through targeted research.

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[6] *By independent, we suggest that exploitation of fisheries resources by the industrial fleet should not have any direct or indirect impact on the availability of fish to the small-scale fisheries sector nor interfere with their fishing activities.*

[7] *See Section 2.10 Institutional Strengthening of the Marine Fisheries Sector Sub-strategy*

Whilst the precautionary principle suggests a conservative approach to fisheries management in the absence of scientific information, targeted research should be conducted to ratify and refine decision-making as further information becomes available. With respect to fisheries research, the following guidelines and recommendations are made:

- Data needs suitable for the recurrent, regular monitoring of the impact of fisheries on target stocks, dependant stocks and ecosystem components needs to be integrated into the upgraded FRSS statistical system. In particular, robust information on by-catch, discards and waste need to be collected on a regular and systematic basis.
- DoF, as a matter of urgency, should develop a core of gear technology specialists to study the selectivity of fishing gear, the impact on target species and non-target species. Based on this, rules covering the design, construction and placement of fishing gear in coastal waters should be refined and developed. Where necessary, the DoF should see opportunities for international and regional collaboration in gear design.
- The DoF should focus on the development of species and multi-species '*Fisheries Management Plans*'. These will require certain critical information on a number of key species that is currently either absent or outdated. As the skills and knowledge available in the Department are scarce, again international and regional collaboration will be essential. It is urged that a more detailed scoping study is conducted to develop a detailed framework for these FMPs based on available information and both short and long-term solutions to building greater scientific certainty in fisheries management. This scoping study should identify the costs and funding opportunities from GoB and international agencies, as well as the knowledge transfer and capacity-building requirements necessary.

5.3 Enabling Resilience in Small-scale Fisheries

Current fisheries management practice does not place sufficient emphasis on the opportunities and threats that arise from outside the domain of fishery. New practices must be developed that place less emphasis on research and management for yield maximization, and greater emphasis on building adaptive capacity. Reduced vulnerability and improved adaptive capacity will partly result from changed behaviors. Institutions must learn to better capitalize on indigenous skills for adaptation and evolve as threats and opportunities present themselves. Institutions are critical in both increasing resilience and reducing vulnerability.

'Resilience' is defined as "the capacity of a complex system to absorb shocks while still maintaining function and to reorganize following disturbance" (Andrew *et.al,* 2007). An important objective of the WorldFish Center campaign for Resilient Small-Scale Fisheries is to better position the small scale fisheries sector to address opportunities and threats from outside traditional sectoral boundaries. Development of management concepts and approaches that provide incentives to both to mitigate risk and adapt under changing scenarios, including external threats, must be a central part of any future small-scale fisheries management strategy. Necessarily, such management will integrate ecological and social drivers and be cross-sectoral.

5.4 Institutional Development

Recent fisheries development initiatives in Bangladesh have focused on inland fisheries, inland capture-based fisheries, as well as freshwater and coastal aquaculture. Besides the initiatives of the Bangladesh Fisheries Development Corporation (BFDC) in the 1970s and then the Bay of Bengal Programme in the 1980s, the marine fisheries sector has received

comparatively little attention and this has been reflected in the low level of research, development and regulation over the past twenty years. This situation is increasingly recognized by the Department and has been reflected in the Marine Fisheries Sector Sub-strategy. There is now an opportunity to strengthen the capacity of DoF in marine fisheries capture management and to share this challenge with coastal communities through co-management initiatives.

- **Upgrade status of marine and coastal fisheries management**: As advocated in the National Fisheries Strategy, a '*Marine Fisheries Directorate'* should be established and provided with the responsibility of implementing the *Marine Fisheries Sector Sub-strategy*. The nature and responsibilities of this new Directorate should be reflected in an updated marine fisheries ordinance (see Principle 5 and subsequent recommendations).
- **Decentralization of management decision-making**: The geographic extent and isolation of many coastal districts and Upazilas means that the devolution of decision-making is necessary to improve compliance, the cost-effectiveness of management and integration with co-management structures essential. As advocated by the *Marine Fisheries Sector Sub-strategy*, capable Marine Fisheries Officers need to be posted to each Upazila, with relevant upgrading of district level marine capture fisheries management skills.
- **Skills and capacity-building**: At present, relatively few DoF officers are trained or skilled in coastal and marine fisheries management or co-management disciplines. It is recommended that one of the first tasks of the new Marine Fisheries Directorate would be to undertake a comprehensive training needs analysis amongst all headquarters, district and Upazila staff, reflecting the requirements of the *Marine Fisheries Sector Sub- strategy* and the ecosystems approach advocated in this particular study.
- **Participation in co-management initiatives**: Marine Fisheries Directorate, both at HQ and field level, should be trained and encouraged to initiate and participate in appropriate co-management and/ or community-based fisheries management initiatives. The model developed through the ECFC project in one coastal district may be extended and further intensified and knowledge based action plan developed for the entire coast with emphasis on the south-west where the resource sensitivity as well as livelihoods sensitivity is most crucial.

6.0 Overall Recommendations

Marine fisheries policy need to be updated to reflect both the precautionary approach (*i.e.* the lack of scientific information should not hold up critical management action, which should be taken in a conservative manner) as well as the ecosystem approach that recognizes that fisheries will impact the structure, function and biological diversity of the wider ecosystem (and *vice versa*). Other policy areas that need greater emphasis include minimizing inter-sectoral resource and spatial conflicts, the development of co-management and community-based fisheries management and other approaches to reduce the vulnerability of small-scale fishers.

Recommendations for precautionary management are provided in the WorldFish report made to the Government (Huntington *et. al* 2007). The key recommendations are as follows:

- Preparation of individual 'Fisheries Management Plans' for key commercial species (or multi-species) fisheries. Within these FMP's identify appropriate harvest limits, reference points and management rules that should be invoked if these are exceeded. Over the short-term, this could be developed from existing information on catch and effort data – over the long-term these could be refined with targeted scientific information.
- Whilst fisheries management needs to be precautionary in the face of scientific uncertainty, it is important that long-term fisheries management needs to underpinned by robust information and research, with an upgrade of the FRSS urgently required for coastal and marine fisheries.
- Fishing capacity and effort needs to be limited for all coastal and marine fisheries. This will require licensing and registration of all mechanized fishing vessels and limits set on their overall capacity and individual effort as part of the FMPs.
- There is an urgent need for improved gear technology and development in Bangladesh. This will allow the gradual replacement of all non-selective gear with more sustainable methods that will still provide a reasonable living. This development will have to be matched with changes in the results and regulations governing gear specification and use, as well as the ability to enforce these.
- A needs assessment for a cost-effective MCS system is urgently needed. It is suggested that the landings of the larger mechanized vessels is restricted to certain designated ports to focus MCS activities, that the logbook scheme is made more robust and extended to the large mechanized gillnet vessels. For artisanal fisheries, the development of community-based policing as part of co-management is considered the most cost-effective solution.
- Better targeted fisheries research is required, and should be firmly driven by fisheries management requirements. Better validation of stock status and fisheries impacts on both target and non-target species is essential in order to develop robust FMPs. This will require considerable capacity-building for the institutions involved, both in planning and implementing the work involved. It is strongly suggested that international collaboration, including with the FAO, leads this process.
- The capacity of DoF to implement the Marine Fisheries Sector Sub-strategy needs to be substantially improved, including the development of a Marine Fisheries Directorate that can target all the coastal areas of Bangladesh, as well as the development of a cadre of qualified Marine Fisheries Officers who can take fisheries management down to the District and even Upazila level. It is particularly important that these officers are provided the skills to engage with local communities and fisheries structures to develop robust and widely rooted co-management systems for artisanal fisheries.

7.0 References

Ahmed, Z. (2007a). Research work report in Chittagong and Cox's Bazaar coastal water (5 years) 2001-2002 to 2005-2006. Marine Fisheries Management Unit Chittagong. 33pp.

Ahmed, Z. (2007b). Shark Fishery of Bangladesh. Marine Fisheries Management Unit Chittagong. 16pp.

Andrew, N.L., C. Béné, S.J. Hall, E.H. Allison, S. Heck and B.D. Ratner (2007). Diagnosis and management of small-scale fisheries in developing countries. Fish and Fisheries 8, 2007, pp. 227-240.

Banks, R (2003). Bangladesh Coastal Capture Fisheries. Report to the Fisheries Sector Review and Future Development. Unpublished internal report. 42p.

Department of Fisheries (2006). Marine fisheries sector sub-strategy. In 'National Fisheries Strategy and Action Plan for the Implementation of the National Fisheries Strategy'. Department of Fisheries, Dhaka, Bangladesh. January 2006, pp. 77-91.

FAO (1996). Precautionary approach to capture fisheries and species introductions. Elaborated by the Technical Consultation on the Precautionary Approach to Capture Fisheries (inc. species introductions). Lysekil, Sweden, 6-13 June 1995. FAO Technical Guidelines for Responsible Fisheries. No. 4. Suppl. 2. FAO, Rome, 2003, 112p.

FAO (2003a). The ecosystem approach to fisheries. FAO Technical Guidelines for Responsible Fisheries. No. 2. FAO, Rome, 1996, 54p.

FAO (2003b). Signing on to the Code of Conduct for Responsible Fisheries: Experiences from the Bay of Bengal. FAO Corporate Document Repository. Ref AD365/E. See http://www.fao.org/DOCREP/006/AD365E/AD365E00.htm 1p.

Funge-Smith, S (2007). Impact of low value/ trash fish use in aquaculture in Asia-Pacific. Presentation to an FAO Workshop on the use of feed fish for aquaculture development. 15 – 19 November 2007, Cochin, India.

Government of Bangladesh (2003). A National Strategy for Economic Growth, Poverty Reduction and Social Development. Economic Relations Division, Ministry of Finance, Government of the People's Republic of Bangladesh. March 2003. 135p. Copy available from: http://www.lcgbangladesh.org/prsp/docs/GoB-2003-I-PRSP%20March%202003.zip

Jørgensen, C., K. Enberg, E. S. Dunlop, R. Arlinghaus, D. S. Boukal, K. Brander, B. Ernande, A. Gårdmark, F. Johnston, S. Matsumura, H. Pardoe, K. Raab, A. Silva, A. Vainikka, U. Dieckmann, M. Heino and A. D. Rijnsdorp (2007). Ecology: Managing Evolving Fish Stocks. Science, 23 November 2007 pp. 1247 – 1248.

Khan, M.G., M.S. Islam., M.G. Mustafa., M.N. Sada, and Z.A. Chowdhury. (1994). Bio-economic Assessment of the effect of the Estuarine Set Bag net on the marine fisheries of Bangladesh. BOBP/WP/94. 28pp.

WorldFish (2007). Towards sustainable coastal and marine capture fisheries in Bangladesh: Initiating a precautionary approach, The WorldFish Center, Bangladesh and South Asia Office, Dhaka, pp. 1-85.

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Present Status of Legal Support to Implement Monitoring, Control and Surveillance in Marine Fisheries Sector in Bangladesh

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1.0 Introduction

The rapid depletion of key fish stocks in the 1980s and 1990s has made it imperative that governments achieve greater control over fishing activities. Under this backdrop, Monitoring, Control and Surveillance (MCS) was first defined by FAO in 1981, by a fisheries expert group that were trying to define the implementing mechanism for fisheries management. It is regarded as the "executive arm", or implementing mechanism for fisheries management and as a key tool for the implementation of the FAO Code of Conduct for Responsible Fisheries (CCRF). From the outset, it is felt that law is central to MCS. As is apparent from the definition of MCS, "control" is concerned with the legal framework within which resources must be exploited while "surveillance" is concerned with ensuring compliance with relevant laws and policies. The legal instruments detail all the control mechanisms available for fisheries management. There are however different spheres of law concerning MCS. The distinction between international law and national or domestic law of a country is particularly important.

In this background, the topic of this paper is the present status of legal support to implement MCS in marine fisheries sector in Bangladesh. In this context, the scope of the present paper is to analyse:

- Functions of Laws in Support of MCS.
- Overview of Relevant International Laws
  - The 1982 United Nations Convention on the Law of the Sea
  - FAO Compliance Agreement
  - 1995 UN Fish Stocks Agreement
  - FAO Code of Conduct for Responsible Fisheries
- Present State of Law Supporting MCS in Bangladesh
  - Key Fisheries Legislations
  - Key Management Measures Related to Implementation of MCS
  - Environmental Legislations
  - Forestry Legislations
  - Other Key Legal Instruments / Policies
- Constraints, Limitations and Gaps

2.0 Functions of Laws in Support of MCS

Following key functions can be fulfilled by laws in relation to MCS:

a) To define the powers, duties and obligations of States, regional fisheries bodies and national fisheries administrations to manage fisheries resources;

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b) To establish rules to be observed by those harvesting marine life;

c) To grant enforcement powers to enforcement officials; and

d) To establish both the judicial machinery and the procedural rules.

3.0 Overview of relevant International Laws

3.1 The 1982 United Nations Convention on the Law of the Sea (UNCLOS III)

The United Nations Convention on the Law of the Sea establishes a comprehensive framework for the use of the world's oceans and sets out the rights and obligations of States in this regard. It establishes and defines basic concepts which are fundamental to an understanding of all relevant international documents, both binding and non-binding. These include the concepts of "flag State", "coastal State", and "port State" and the definition of the various internationally recognized maritime zones including: internal waters, territorial sea, exclusive economic zone, and the high seas. Its entry into force in 1994, enabled it to fulfill its true function as an "umbrella" convention which is supported and elaborated upon by the provisions of the FAO Compliance Agreement, the 1995 UN Fish Stocks Agreement and the FAO CCRF, all of which were designed to complement and be fully consistent with the 1982 Convention.

3.2 FAO Compliance Agreement

The Compliance Agreement has come into force in 2001 and has become an integral part of the FAO CCRF. The Compliance Agreement has two primary objectives. The first requires all States whose fishing vessels operate on the high seas to institute a range of measures designed to ensure that those vessels do not undermine efforts to conserve and manage the living resources of the high seas. The second objective is to increase the transparency of all high seas fishing operations through the collection and dissemination of data. The most important article in the FAO Compliance Agreement is Article III which sets out the responsibilities of the flag State. In essence, it requires the flag State to "take such measures as may be necessary to ensure that fishing vessels entitled to fly its flag do not engage in any activity that undermines the effectiveness of international conservation and management measures".

3.3 1995 UN Fish Stocks Agreement

The 1995 UN Fish Stocks Agreement was adopted on 4 August 1995. It is consistent with the 1982 Convention on the Law of the Sea and imposes a direct obligation on the flag State to ensure both that its vessels comply with applicable conservation measures and do not undermine their effectiveness. The 1995 UN Fish Stocks Agreement sets out general principles to be followed by States in order to conserve and manage straddling and highly migratory fish stocks. It requires a precautionary approach to be taken to fisheries management and encourages States to adopt compatible measures in relation to stocks within areas under the jurisdiction of coastal States and in the high seas.

3.4 FAO Code of Conduct for Responsible Fisheries

The FAO CCRF is a broad and comprehensive but non-binding document. From the perspective of MCS, one of the stated objectives is for the Code "to serve as an instrument of reference to help States to establish or to improve the legal and institutional framework required for the exercise of responsible fisheries and in the formulation and implementation of appropriate measures".

The Code is based on recognition that if world fisheries are to be sustainable in the long term, structural adjustment within the fisheries sector is required and, effective implementation of the Code requires the participation and co-operation of a wide range of stakeholders. Implementation of the Code is primarily the responsibility of the States that are party to it.

4.0 Present state of Laws supporting MCS in Bangladesh

A good number of legislative instruments are in force in Bangladesh which support MCS directly or indirectly. These are the ordinances, Acts or Rules published officially through various Ministries over the decades. Some of the key legislations are described below.

4.1 Key fisheries legislations

(i) The Protection and Conservation of Fish Act, 1950 (East Bengal Act 18 of 1950)

The Protection and Conservation of Fish Act, 1950 was adopted to provide for the conservation of fish resources. Under this law the government may for a specified period prohibit the catching, carrying, transporting, offering or exposing or possession for sale or barter of fishes below the prescribed size of any prescribed species throughout Bangladesh or any part thereof. Regulatory instruments to control depletion of Hilsa fish came under this Act of 1950 by Gazette Notifications at a later stage.

(ii) The Marine Fisheries Ordinance, 1983

The base law and regulatory instrument for marine fisheries is the Ordinance of 1983. The Marine Fisheries Ordinance, 1983 covers the territorial waters and economic zone of Bangladesh as declared by the Government under the Territorial Waters and Maritime Zones Act, 1974, and any other marine waters over which it has, or claims to have, jurisdiction under law with respect to the management, conservation and development of the marine living resources. This law has authorised the Government to specify the types, classes and number of fishing vessels that can be deployed in Bangladesh waters having regard to the requirement of fisheries management and development plans. Under Section 28 of the Ordinance the Government may declare any area of Bangladesh waters and an adjacent or surrounding land to be a marine reserve.

(iii) The Marine Fisheries Rules, 1983

The Marine Fisheries Ordinance, 1983 is applied through rules enacted in the same year as Marine Fisheries Rules, 1983 and amended in 1993. They regulate the issuance and conditions of fishing licenses for national and foreign fishing vessels, determining license conditions, allowed fishing gear, mesh size, etc. Licenses, unless determined otherwise in an individual license, shall expire on 31 December of the year of issuance. Allowed fishing areas are determined according to type of fishing gear used, for example, for fishing with set bag nets, upto 40 meters depth in marine waters at high tide. Model application forms for licenses as well as obligatory catch record forms are annexed to the Rules.

4.2 Key management measures related to implementation of MCS

Some of the key management measures and legislative moves effecting MCS are enumerated below:

(i) Limiting the fishing days for industrial trawlers

The freezer trawlers are permitted to fish for 30 days while non-freezer trawlers are permitted to sail for up to 15 days.

(ii) Measure to limit discard of bi-catch

Shrimp trawlers must have at least 30 percent fish in the total catch. This measure was enforced in order to limit the discard of by-catch.

(iii) Control of mesh size

Mandatory 45 mm mesh size at the cod end for the shrimp trawl nets has been enforced to facilitate the escape of small size fish, shrimp and the juveniles of larger fish. Since 2003, high profile drive against catching of *jatka* (hilsa fry) by small mesh nets called "Current *Jaal*" is ongoing during the period February to May every year. Bangladesh Navy and Coast Guard are deployed to enforce the ban routinely.

(iv) Depth zone restriction of 40 m

There are provisions for restricting shrimp and fish trawling within the 40 m depth zone to protect the nursery grounds of marine fish and shrimp and preserve the interest of artisanal fishers.

(v) Formulation of marine fish exploration guidance

Guidelines for the industrial fishing fleet have been formulated and published to ensure proper exploitation of the fishery resources.

(vi) Declaration of hilsa sanctuary

Four sites in the coastal area have been established as hilsa sanctuaries, where fishing is banned from 15 - 24 October every year during peak hilsa spawning period.

(vii) Restrictions on industrial trawler license

Government has restricted the issue of fresh license for any industrial trawler till proper survey of the EEZ is carried out.

(viii) Encouragement to fish beyond 500 m isobaths of EEZ

Government has decided to encourage industrial fishing fleet to fish outside 500 m isobaths within EEZ, in order to reduce pressure in the coastal fish population.

(ix) Restriction on post larvae collection

Government has restricted post larvae collection in coastal areas in 2000, which was later reinforced in 2002.

(x) Ban on throwing any fish into the sea

Government has imposed restriction on throwing any catch of fish or aquatic resource except turtle in the sea

(xi) Declaration of marine reserve

Government has declared Middle Ground and South Patches in the Bay of Bengal as marine reserve.

4.3 Key environmental legislations

The Environmental Conservation Act, 1995

The Act has empowered the Government to declare an area as an 'ecologically critical area' (ECA) if its eco-system appears to be under serious threats of degradation or is

degraded. The Environmental Conservation Rules, 1995 were passed subsequently under this Act. In 1999, the Ministry of Environment and Forests declared seven areas as ecologically critical areas having effect in marine fisheries like Sundarbans, Cox's Bazar-Teknaf sea beach, St. Martin's Island, Shonadia Island. Later Sundarbans was withdrawn from the list and instead outside of Sundarbans Reserve Forest a 10 km extent was declared as ECA. In these ECAs, a ban has been imposed on some activities including activities that may be harmful for fish and aquatic life.

4.4 Key forestry legislations

(i) The Forest Act, 1927

Under this Act Government is empowered to declare reserve forests. Although part of Sundarbans was declared as reserve forest in 1878.

(ii) Rules to Regulate Hunting, Shooting and Fishing within the Controlled and Vested Forests, 1959

These rules were made in 1949 banning certain destructive methods of fishing in controlled forest areas. It also kept provision of fishing in such areas by taking permits.

4.5 Other key legal instruments / policies

(i) The Territorial Waters and Maritime Zones Act, 1974 and the Territorial Waters and Maritime Zones Rules, 1977

Under the Territorial Waters and Maritime Zones Act, 1974, various maritime zones like internal waters, territorial sea, exclusive economic zone and continental shelf were defined. Territorial Waters and Maritime Zones Rules, 1977 were enacted under the Act. It regulates the activities of foreign ships in territorial waters in the exclusive economic zone, etc.

(ii) The Bangladesh Merchant Shipping Ordinance, 1983

In parallel with the Marine Fisheries Ordinance, 1983, Merchant Shipping Ordinance was enacted in the same year. Under the ordinance, requirement of registration and boat certification were made mandatory for fishing boats. It also has provisions for marking of fishing boats and certification of the skippers and drivers are made mandatory under the ordinance.

(iii) Bangladesh Code of Conduct for Responsible Fishing

In line with the FAO CCRF, a Code of Conduct for Responsible Fishing has already been drafted for Bangladesh. The same is presently undergoing review by a committee.

(iv) Bangladesh Coastal Zone Policy – 2005

The Ministry of Water Resources has formulated a Coastal Zone Policy with a goal to integrate coastal zone management including the marine fisheries component. It also emphasizes on the ECAs and special measures to conserve natural environment of Sundarbans. Further, it also outlines the issue of marine pollution briefly.

5.0 Constraints, Limitations and Gaps

5.1 Difficulties in enforcement

The primary weakness of MCS in Bangladesh is the difficulties in implementation of existing legislations and management measures. Marine Fisheries Ordinance, 1983 and the Rules made under the Ordinance are comprehensive enough to achieve a reasonable standard of

MCS in the marine fisheries sector. However, marine fisheries legislations have been generally implemented for the industrial fishing trawlers. In the artisanal field, such legislations and management measures face severe challenges in implementation and execution. Socio-economic and awareness issues might be the primary cause for this situation but, non practice of executive power, failure to act responsibly by the stakeholders, interference of pressure groups, lack of trained manpower in marine fisheries sector, etc cannot be ignored either. Bangladesh Coast Guard entrusted with the fishery protection duty faces resource and manpower constraints. It needs proper surface platforms and surveillance aircraft for carrying out its fishery protection duties effectively.

5.2 Lack of coordination

Need for better coordination and understanding among concerned ministries and departments is important to formulate any legislative instrument comprehensively.

5.3 Marine pollution

Marine pollution has reached a level that could create an unmanageable situation in the near future in Bangladesh. Although Bangladesh is a party to a number of international conventions related to marine pollution, no comprehensive domestic legislation has been enacted on this issue till now. Environmental Conservation Act, 1995 does not cover marine pollution adequately. However, the Department of Shipping is in the process of formulating a draft Marine Pollution Act. This should be drafted jointly by experts of the concerned departments.

5.4 Status of Sundarbans

The Sundarbans biodiversity is crucial to Bangladesh due to many reasons. Sundarbans functions as vital nursery ground for important commercial species of the Bay of Bengal that are harvested in Bangladesh and neighboring countries. It functions as nursery ground for a large part of commercially exploitable fisheries of the Bay of Bengal. Being the nursery for nearly 90 percent of the aquatic species of eastern coast, the coastal fishery of eastern India is depended upon Sundarbans as well. Over 200 species of fish identified in this forest are harvested by about 300 000 fishers using approximately 25 000 small and motorized boats. The Sundarbans Mangrove Forest fishery has been managed by the Bangladesh Forest Department since 1897. Management is limited to issuing permits. Conservation science is almost totally lacking. Research on fisheries is inadequate. A joint management of Sundarbans is crucial for proper management of the Sundarbans fisheries and vital nursery ground for marine fisheries species. Although a number of isolated regulations have been enacted for the conservation of the resources and ecosystem of Sundarbans, a comprehensive instrument is yet to be formulated. The initiative to institute a comprehensive fisheries management system by the Asian Development Bank supported “Sundarbans Biodiversity Conservation Project”, was withdrawn in 2004. The project was undertaken by the Ministry of Environment and Forest with no apparent participation by Department of Fisheries.

5.5 Lack of participatory approach

Participatory approach by all stakeholders is the key to successful implementation of any management measures or legislative instruments. Although a trend has been established in the recent years to consider opinions of the stakeholders before finalizing legislative instruments, communication gaps and conflicts of interests between the stakeholders are difficult to reduce.

5.6 Licence for fishing boats

Although industrial fishing trawlers are licenced except 31 on-trial trawlers under court order, it is believed that only 15-20 percent of the artisanal fishing fleet is registered and licensed. Licence fee for the mechanized boats has been increased twice as empowered by the Marine Fisheries Ordnance, 1983. This has further discouraged the poor and uneducated boat owners to register their boats and obtain fishing licence from the authorities like MMD and MFD. The need for annual renewal added by the fear of possible harassment are other obstacles in the way further promoting reluctance on the part of the boat owners to register their boats. Introduction of nominal fee along with awareness build up may solve this problem.

5.7 Effect of modern technology

Modern technologies have brought changes in the enforcement mechanism of MCS. Satellite based VMS has been introduced in a good number of countries including some in Asia. But marine fisheries legislations in Bangladesh have not covered such provisions. Legislative changes are therefore required to introduce licensing system requiring installation of ALCs in fishing trawlers. Legislations should also provide provision for clear marking of fishing boats capable of identification both via satellite-based VMS system and in order to match data derived from the VMS system with information obtained from other sources such as visual inspection.

5.8 Trial permission

Thirty-one trawlers are operating for decades without licence and without paying revenue in the name of trial permission by court order. The cases should be resolved as early as possible and measures may be taken to stop such practices of operating without licence.

5.9 Restriction on maximum number of fishing trawlers

Although as an administrative measure no fresh licences are issued for new fishing trawlers; law is required to put a ceiling on the maximum number of fishing trawlers to be allowed as empowered by The Marine Fisheries Ordinance, 1983.

5.10 Catch ceiling

Like in the Philippines, rules may be enacted to prescribe limitation or quota on the total quantity of fish captured, for a specific period of time and specific area based on the best available evidence. Such catch ceilings may be imposed for species of fish when necessary and practicable. Section 7 of the Marine Fisheries Ordinance, 1983 already empowers the Government to make such rules.

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