WorldFish Center
Discussion Series No. 3

Governance and Institutional Changes in Fisheries: Issues and Priorities for Research

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2006

Published by The WorldFish Center
P.O. Box 500 GPO, 10670 Penang, Malaysia

Siar, S.V., M. Ahmed, U. Kanagaratnam and J. Muir (eds.) 2006. Governance and Institutional Changes in Fisheries: Issues and priorities for research. WorldFish Center Discussion Series No. 3. 110 p.

WorldFish Center Contribution No. 1769

Printed by Yale Printers Sdn Bhd

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FUTURE HARVEST

The WorldFish Center is one of the 15 international research centers of the Consultative Group on International Agricultural Research (CGIAR) that has initiated the public awareness campaign, Future Harvest.

Contents

Preface

Several fundamental changes have shaped and affected the institutions in fisheries throughout the world. The declaration of exclusive economic zones (EEZs) under United Nations Convention on the Law of the Sea (UNCLOS) in the seventies and eighties has enabled countries to expand their fleets or negotiate fishing arrangements within their territorial waters. A number of subsequent changes in international and regional policy regimes such as Convention on Biological Diversity (CBD), Convention on International Trade in Endangered Species (CITES), Millennium Development Goals (MDG), and World Summit on Sustainable Development (WSSD) have warranted a greater responsibility and a higher accountability by the nation states toward their domestic fisheries. By the mid-1980s, developing countries took the lead in fish production, and at present supply 75% of the global production. In the meantime, the mass application of low-cost fish breeding technologies for a number of popular species, along with advanced farming knowledge and more intensive farming techniques have revolutionized the aquaculture sector, with significant effects on land and water use patterns in inland and coastal zones.

Increased and diversified market demand and expanding trade, in particular the growing power of large business interests, a liberalized trade regime, and more recently the concern for food safety and sanitary barriers, have created a new world order for international trade in fish commodities. Developing countries became net exporters since the 1980s and command 50% of the total gross value of exports. This has put the developing countries into a continuous process of changing governance and institutional structure for their domestic fisheries and interaction in their coastal waters and in the open/high seas.

National and local governments in the developing countries had to cope with dramatic changes in international laws, regulations and trade. This transformation process also involved changes in domestic laws, enactment of new regulations and reforms of institutions that promoted devolution and decentralization of resource management responsibilities. Little, however, is known about the impact of these institutional changes on the overall governance performance in the fisheries sector, and resultant economic and social benefits, in particular the impact on poorer people's livelihoods. In pursuance of the MDG of halving by 2015 the population of poor people in the developing countries that live on less than a dollar a day, an increasing contribution of institutions and governments are predicted by policy makers, governments, and donors (such as the ADB, DFID, World Bank, and so forth).

Time, therefore, is ripe to learn about the multitude and direction of the institutional changes over the last two or three decades, and their relevance and impacts on poverty reduction in developing countries. A two-day consultation meeting was held in Dhaka, Bangladesh during 6-7 October 2004. The objectives of the meeting were: 1) to review and assess the institutional changes in fisheries institutions and governance, and their relevance and impact on poverty elimination and environmental protection in developing countries; and 2) to develop a framework for an in-depth study on national policy and legislative changes and the impact on livelihoods and poverty reduction strategy as well as sustainable management of the aquatic environment. The editors are grateful to the authors and participants (listed in Appendix 2) from international and regional organizations, and selected fishing countries (where poverty reduction is one of the MDGs) for providing valuable input in producing and finalizing this discussion paper.

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Acknowledgement

This is one output of an ongoing collaboration that involves The WorldFish Center and the Institute of Aquaculture, University of Stirling. Special thanks are due to the Department of Fisheries, Bangladesh and staff members of The WorldFish Center, Bangladesh and South Asia office. Their excellent organization and support during the workshop on Governance and Institutional Changes in Fisheries – Impact on Poverty Reduction and Environmental Integrity in Developing Countries held on 6-7 October 2004 in Dhaka, Bangladesh enabled the partners to participate actively and contribute to the discussion papers. We sincerely thank all partners and collaborators for their time and dedication in initiating and finalizing their country papers. Dr. Douglas C. Wilson reviewed the final draft of this report and his comments are gratefully acknowledged. The financial support of the Institute of Aquaculture, University of Stirling and the Danish International Development Agency (DANIDA) is also gratefully acknowledged.

Abbreviations and Acronyms

ACIAR	Australian Centre for International Agricultural Research
ADP	Annual Development Plan
AfDB	African Development Bank
AFMA	Agriculture and Fisheries Modernization Act, Philippines
AKVAFORSK	Institute of Aquaculture Research, Norway
AusAID	Australian Agency for International Development
BARC	Bangladesh Agricultural Research Council
BFAR	Bureau of Fisheries and Aquatic Resources, Philippines
BFDC	Bangladesh Fisheries Development Cooperation
BFRI	Bangladesh Fisheries Research Institute
BVC	Beach Village Committee, Malawi
BOI	Board of Investments, Philippines
CAP	Fisheries Management Council, Mozambique
CBD	Convention on Biological Diversity, 1993
CBO	Community-based Organization
CBRM	Community-based Resource Management, Philippines
CCRF	Code of Conduct for Responsible Fisheries (United Nations)
CFDO	Community Fisheries Development Office, Cambodia
CFMU	Community Fisheries Management Unit, Malawi
CITES	Convention on International Trade in Endangered Species, 1975
CLSU	Central Luzon State University, Philippines
CLU	Community Liaison Unit, Malawi
CMO	Community-managed Organization, Bangladesh
CODEC	Community Development Centre, Bangladesh
COFI	Committee on Fisheries (FAO)
CPUE	Catch per unit of effort
DANIDA	Danish International Development Agency
DA	Department of Agriculture, Philippines
DANR	Department of Agriculture and Natural Resources, Philippines
DGCI	Directorate General for International Cooperation, Belgium
DFID	Department for International Development, UK
DNAP	National Directorate for Fisheries, Mozambique
DoF	Department of Fisheries, Cambodia
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FARMC	Fisheries and Aquatic Resources Management Council, Philippines
FCCC	Framework Convention on Climate Change, 1994
FCDI	Flood Control, Drainage and Irrigation project, Bangladesh

FDP, Malawi	Fisheries Development Project, Malawi
FDP, Mozamb.	Fisheries Development Plan, Mozambique
FIDC	Fishery Industry Development Council, Philippines (abolished 1984)
FLA	Fishpond Lease Agreement, Philippines
FMO	Fisheries Management Organization
FMP	Fisheries Master Plan, Mozambique
FRAMS	Fisheries Research and Management Support (of DFID, UK)
GATT	General Agreement on Tariffs and Trade (WTO)
GDP	Gross Domestic Product
GIFT	Genetically Improved Farmed Tilapia (WorldFish Center)
GMIT	Genetic Manipulation for Improved Tilapia project, Philippines
GMP	Good Management Practices
GTZ	Deutsche Gesellschaft fuer Technische (German Technical Cooperation)
HACCP	Hazard Analysis and Critical Control Point System
ICEIDA	Icelandic Agency for Development
IDRC	International Development Research Centre, Canada
IDPPE	National Institute for Small Scale Fisheries Development, Mozambique
IFAD	International Fund for Agriculture Development
IFM	Institute for Fisheries Management and Coastal Community Development, Denmark
IGA	Income-generating Activity
IIP	National Institute for Fisheries Research, Mozambique
JICA	Japan International Cooperation Agency
LEAF	Local Extension Agents for Fisheries, Bangladesh
LCFA	Lake Chiuta Fishermen Association, Malawi
LLDA	Laguna Lake Development Authority, Philippines
LFMA	Local Fisheries Management Authorities, Malawi
LGC	Local Government Code
LGU	Local Government Unit, Philippines
MAGFAD	Malawi-German Fisheries and Aquaculture Development Project
MAFF	Ministry of Agriculture, Forestry and Fisheries, Cambodia
MCS	Monitoring, Control and Surveillance
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreement
MEAs	Multilateral Environmental Agreements
MFO	Marine Fisheries Ordinance, 1983
MoE	Ministry of Environment, Cambodia
MoF	Ministry of Fisheries

MoFL	Ministry of Fisheries and Livestock, Bangladesh
MoL	Ministry of Land, Bangladesh
MPA	Marine Protected Area
MRC	Mekong River Commission, Vientiane, Lao PDR
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NACA	Network of Aquaculture Centres in Asia-Pacific
NCB	Nationalized Commercial Bank, Bangladesh
NFPM	New Fisheries Management Policy, Bangladesh
NGO	non-government organization
NORAD	Norwegian Agency for Development Cooperation
ODA	Overseas Development Agency, UK
PFDA	Philippine Fisheries Development Authority
PIC	Prior Informed Consent, 1998
PO	People's Organization, Philippines
PRA	Participatory Rapid Appraisal
PRSP	Poverty Reduction Strategy Paper
RFO	Regional Fisheries Organization
SAP	Sanitary and Phytosanitary (compliance)
SAP, Mozamb.	Structural Adjustment Program, Mozambique
SEAFDEC	Southeast Asian Fisheries Development Center
SPAPs	Provincial Directorates for Fisheries, Mozambique
SPS	Sanitary and Phytosanitary Agreements
TAC	Total Allowable Catch
TBT	Technical Barriers to Trade
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea, 1982
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VMS	Vessel Monitoring System
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization

1 Governance and Institutional Changes in Fisheries – Impact on Poverty Reduction and Environmental Integrity in Developing Countries

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Introduction

The world observed an unprecedented rise in production, consumption and trade of fish during the last three decades. Total fish production doubled to 130 million tonnes in 2001 from the level of 1971. Developing countries as a whole now supply nearly 75% of the fish, representing 50% of the total value of the global fish trade. Asian developing countries alone produce 56% of the total fish (FAO 2004). Technological breakthroughs in aquaculture triggered by increased demand for fish in the world market, and simultaneous changes in international laws, treaties and institutions contributed to this phenomenal growth in the supply of fish. Structural reforms in many developing and transitional economies (e.g. China, India, Thailand, and Vietnam), inspired by a new era of globalization and liberalization, also contributed to the shifts in the structure of production, consumption and trade in fish. Aquaculture, regarded as one of the greatest technological successes in the last quarter of the twentieth century, grew from only 3.9 million tonnes in 1971 to 42 million tonnes in 2001, most of which come from developing countries. It now represents about 32% of the total production from barely 6% in 1971 (FAO 2004).

Fish played an important role in doubling the growth of per capita animal protein consumption in developing countries in the last 30 years, increasing from 6.3 kg in 1970 to 13.8 kg in 2000. Fish consumption increased by less than one half in the developed world during the same period. From 1970 to 2000, the average per capita fish consumption in the world increased by 43% from 11 kg to 16 kg. Factors that drove increasing fish consumption in the developing countries, particularly in Asia, are urbanization, and income and population growth (Dey et al. 2004). These factors are responsible

for the more than four-fold increase in China's per capita consumption of fish between 1971 and 2000 (FAO 2003). On the contrary, the revolutions in fisheries and aquaculture did very little to raise the production and consumption levels of fish in Africa, where protein and nutrition deficiencies are common phenomena, and persistent poverty and low level of per capita income are major hindrances to growth in the production and consumption of fish.

International treaties and conventions played a vital role in the rapid expansion of markets and national fishing capacity, as well as the application of modern fishing techniques. The creation of exclusive economic zones (EEZs) and the implementation of the 1982 United Nations Convention on the Law of the Sea (UNCLOS), along with various other conventions, such as the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species (CITES), and conventions on the management of shared stocks such as tuna, provided more than just fishing rights to the coastal states over an extended area of the sea. These conventions and treaties have also increased self-responsibility of the nations for their management (Ahmed and Lorica 2002). The new fisheries regime, however, warranted further devolution in the governance of fisheries and ocean ecosystems toward more decentralized and participatory management systems.

Many countries have in principle adopted policies of decentralized governance and institutions that are expected to create conditions for further devolution of fisheries governance. Although instruments for devolution of fisheries management are still not fully developed, and progress toward implementation has been slow, there are examples of common pool fisheries resources being released to the community under co-management or partnership arrangements in many sites and some developing countries (Gardiner and Viswanathan 2004). Evidence suggests that these arrangements have had enormous positive impact on income and livelihoods of poor fishers as well as significant improvement in the management of the resources (Viswanathan et al. 2003). An overall improvement in political governance is still seen as a pre-condition to improving fisheries governance, especially if institutional changes are to make any profound future impact on the livelihoods of the poor people dependent on fisheries in the developing countries.

A framework for analysis

Table 1 illustrates the paradigmatic shifts in fisheries and how these have influenced governance and institutional changes at the global, national, and local levels. The 1950s and 1960s saw the early development of fisheries before the advent of technological breakthroughs that would revolutionize fish harvesting and production. The "freedom of the seas" dominated the thinking among fishing nations. The following decade saw the declaration by coastal states of exclusive economic zones up to 200 nautical miles (n.m.), increasing territories under national jurisdiction, with concomitant modernization of fishing fleets and harvesting technologies. By the end of the decade, alarm bells were being sounded about the crisis in the world's resources. The beginning of the 1980s ushered in new thinking about the world's oceans, from the "freedom of the seas" to the "common heritage of mankind" with the passage of the United Nations Convention on the Law of the Sea (UNCLOS) in 1982. During the same decade, the framework of sustainable development was laid down by the Brundtland Commission. By the 1990s, concern about property rights and social equity dominated the discussions, and countries moved towards participatory approaches to resource management and decentralization. Many countries in Africa and Asia experimented with community-based and co-management approaches to fisheries management at the local level, in many cases supported or catalyzed by donor agencies and non-governmental organizations. This decade saw the establishment of marine protected areas as a tool for fisheries management. With the ushering in of the new millennium, the world's governments committed themselves not only to the achievement of economic growth, but more importantly, to the elimination of poverty.

The changes in fisheries take many forms such as technological improvements, increase in fishery jurisdictions, new trade and food safety standards, development of aquaculture, international instruments or conventions, and legislative changes (Table 2). These changes may directly or indirectly have an impact on poverty reduction and environmental integrity. Institutional changes may be influenced and driven by international agreements and conventions or by the dominant paradigm of the time regarding the problems and appropriate solutions to those problems. In complying with international agreements and conventions, or formulating solutions, national governments may choose to create new institutions or abolish existing ones, pass new legislations leading towards decentralization of authority, support research to improve technology, or institute new

Table 1. Changes in paradigm and governance and institutions in fisheries at different time periods.

		Dominant paradigm			
		Unexploited potential	Peak and early signs of resource crises Economic growth	Sustainable development →	Access rights Social equity Poverty elimination Multi- functionality and eco-system approaches
Governance and Institutional Responses	Global	Freedom of the seas	EEZs, UNCLOS, common heritage of mankind	Brundtland Report	Trade liberalization, MDG, WSSD
	National	• Open access	• Expansion of jurisdiction of coastal states • Sharing and licensing agreements through joint ventures with distant water fishing nations • Modernization of fishing fleets • Monitoring, control and surveillance system • Aquaculture revolution • Export of Western stock assessment and management techniques	• Environmental regulations • Integrated coastal zone management • Participatory approaches in fisheries management • Biodiversity • Local ecological knowledge	• Decentralization • Modernization of research and fisheries management • Recognition of community-based and co-management approaches • Poverty strategy reduction paper • Precautionary principle • Collaborative research
	Local		• Increased effort • Conversion of mangroves into fishponds • Privatization		• Coastal resource management planning • Establishment of MPAs
		1950s -1960s	1970s - early 80s	Mid-1980s - early 90s	Mid-1990s - 2000
		Time period			

processes. One of these courses of action may be dominant at one time or another, and may conflict or be in harmony with existing institutions and practices. Moreover, there will be differential impacts among the different sectors involved in fisheries and aquaculture, e.g. fisheries, fish farmers, traders, fish workers, importers and exporters, as well as the different levels

Table 2. Typology and timeline of governance and institutional changes in fisheries.

Time period	Changes					
	Technology	Fishery jurisdiction	Trade and food safety standards	Aquaculture development	Instruments and conventions	Legislative changes
1950s to 1960s						
1970s to 1980s	√	√	√	√	√	
1990s to present		√	√	√	√	√

of government. How these changes come together and affect the lives of fishers, fish farmers, and the poor is a question that needs to be answered.

What types of institutions are needed to address poverty and the environment?

In order to address the above question, it is necessary to trace the linkages and pathways from governance and institutional changes in fisheries to poverty reduction and environmental integrity. Both formal and informal institutions are always changing. Even when such changes are not dramatic shifts in written laws and basic organizational structures, marginal changes are happening through evolving interpretations and shifting degrees of compliance. These constant changes are formed by competitive processes in which different groups seek to push the institutions in the directions they desire (Wilson 2003a).

The critical thing to understand about the relationship among institutions, poverty reduction and environmental integrity in fisheries is that almost all conservation measures affect the allocation of resources in a new way. Allocation, and hence economic struggle between groups, can never be wholly separated from environmental management decisions. Even agencies seeking the technocratic ideal of standing "above the fray" are not able to wholly remove the political struggle from environmental management. So the most important question in respect to conservation and poverty reduction in fisheries is the same as it is in other sectors: how can the poor be empowered? If poverty reduction is a marine policy goal, then government agencies must keep this question constantly in mind. This necessarily involves the devolution of rights and responsibilities to fishing

communities, but it also means that such devolution be carried out in a way that does not simply further empower local elites and indirectly reduce the access of the poor to the resource (Agrawal and Ribot 1999).

Finding appropriate and effective ways of doing this is a critical research question. It involves examining various decision-making functions and the ways they are allocated within nested polities. A helpful way of beginning such an examination is to use Ostrom's (1990) categorization of resource management rules. She offers a distinction between operational or day-to-day decisions, collective choice rules that determine how operational rules are made, and constitutional rules or rules about who can make which decisions. It is particularly important that the government be able to influence the third kind of rule, as this will allow them to help maintain a balance of local power and ensure that the poor have a voice. Another important theoretical concern is how the institutional structures facilitate effective communications. Management systems addressing large-scale resources have a difficult time maintaining communicative mechanisms that allow them to respond to rich information (Wilson 2003) about both the condition of the resource and social conditions, including the situation of the poor.

Beyond these theoretical considerations, this research question needs to examine variations in actual management experience. This involves examining, inter alia:

- What are the major institutional changes and which are common?
- Which institutional changes have the greatest impacts? How?
- What are the responses to these changes?
- How are fishers, traders, fish workers and other stakeholders affected by those changes?
- What are the problems at the national and local levels in complying with international agreements?
- What capability-building activities are needed by governments?

The sections that follow briefly discuss the international conventions and agreements that have a bearing on governance and institutional changes in fisheries.

UNCLOS, ocean governance and decentralization

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) is the framework for ocean governance, and "says who is responsible or has the right to make decisions relating to important aspects of ocean use" (Friedheim 1999: 751). Kimball (2001), in a report focusing on international ocean governance, outlined the following rights and responsibilities of states within offshore zones (p. 7-8):

- "*internal waters*, which are landward of the baseline and form of a state's territory. Normally, they include estuaries, ports, and rivers and bays up to a certain size. (The *baseline* constitutes the outer boundary of internal waters and the starting point for the delimitation of the zones beyond. Normally, it is the low water line. In particular geographic configurations, baselines may be drawn to include extensive marine areas as internal waters. (Article 7));
- *a territorial sea* of up to 12 n.m. in which the coastal state exercises full sovereignty subject to the right of innocent passage for foreign ships;
- *a contiguous zone* adjacent to the territorial sea which may not extend beyond 24 n.m. from the baseline, in which the coastal state may exercise control necessary to prevent and punish any infringement of its customs, fiscal, immigration or sanitary laws and regulations that has taken place within its territory or territorial sea;
- *an exclusive economic zone (EEZ)* beyond and adjacent to the territorial sea which may not extend beyond 200 n.m. from the baseline, in which the coastal state has sovereign rights over natural resources and other economic uses and jurisdiction as specified in the Convention regarding marine scientific research, marine environmental protection, and the establishment and use of artificial islands, installations, and structures; and
- *the continental shelf*, which may extend beyond 200 n.m. but not beyond 350 n.m. from the baseline (depending on the configuration of the seabed), where the coastal state exercises sovereign rights over natural resources and jurisdiction over marine scientific research."

The establishment of EEZs by coastal states not only increased their ocean resources but also gave them "an opportunity to take a leadership role in the management of resources under their jurisdiction and to use these resources for their economic development" (Hinds 2003: 354). This has prompted governments to divide these areas into different zones or according to specific

activities and to move towards decentralization. For example, in India, fish production from the EEZ, major fishing harbors, fishing vessel industry, seafood export trade, and marine and inland research and training, are under the responsibility of the Union Government, with the Indian Parliament having the exclusive power to make laws on matters related to these (Matthew 2003). On the other hand, inland and marine fisheries and aquaculture within the 12 n.m. territorial waters are under the authority of the State Government (Matthew 2003). Within these zones, different government agencies and instrumentalities exercise specific authority such as survey and assessment of fisheries resources, protection of endangered marine species, fish processing, seafood exports, and control of fishing vessels.

Regional collaboration in fisheries management also became important, especially concerning the management of shared and migratory fish stocks. Such regional collaboration is mandated under the 1995 UN Fish Stocks Agreement, which prohibits fishing states that are not members of regional or sub-regional fisheries management organizations from fishing in EEZs and the high seas where there are straddling or highly migratory fish stocks (Friedheim 1999). Regional fisheries organizations (RFOs) include the Indian Ocean Tuna Commission, International Commission for the Conservation of Atlantic Tuna, Northwest Atlantic Fisheries Organization, and Commission for the Conservation of Antarctic Marine Living Resources.

EEZs have become the national commons of coastal states (see Friedheim 1999) whereas the high seas resources have become the regional "commons" of RFO members (Garcia and Hayashi 2000).

The successful achievement of the objectives of international conventions is dependent on their implementation at the national and local levels. At the national level, governments have to enact policies, create or re-structure institutions, and initiate participatory ways of working with stakeholders to fulfill their obligations. In the process of doing so, lack of coordination and conflicts may arise among the relevant agencies in charge of fulfilling such international commitments. According to Hinds (2003: 351), there were more than 900 agreements and non-binding legal instruments on the environment by 1992, and at the national level, "the passage of legislation has not kept up with the volume of international conventions, resolutions, agreements, protocols signed or ratified".

The state of the world's fisheries and oceans bears witness to the weakness of governance structures and institutional arrangements. As the reach of regulatory control expanded with EEZs, there is an increasing incongruence between the scope and objectives of governance, whereby different objectives are emphasized at different times (Hanna 1999). For example, these objectives at one time or another perhaps increased export earnings, economic development, employment generation, or food security. Moreover, governance structure in fisheries is not flexible, and fails to take into account transaction costs among users, fact and tenure uncertainty, and competition. Strengthening fisheries governance is driven by internal as well as external challenges (Hanna 1999). These include the current state of fisheries characterized by resource depletion and excess capacity motivating national governments to devolve management responsibilities to users, the growing importance of seafood in international markets, as well as the increasing support of developed countries for non-consumptive uses.

Fisheries, aquaculture and the environment

As the national jurisdiction over the oceans expands, there is at the same time a move towards management at the ecosystem level (Garcia and Hayashi 2000). These processes have led to tensions and conflicts among stakeholders, and may be evident at the national as well as local levels among government departments in charge of fisheries and the environment.

Capture fisheries in both inland and marine waters, and aquaculture in both freshwater and brackish water have raised concerns for the long-term sustainability and integrity of the aquatic environment. Fishing activities have led to perpetual overfishing, discard of a large quantity of by-catch, habitat destruction and ecosystem modifications (Hall 1999). Overexploitation of fisheries resources has posed the greatest environmental threat to the world, especially to the fish habitat and species diversity (World Bank 2004).

Technological advances in the previous decades have produced extra pressure on the fishery resources and habitats. Most of the wild stocks are classified as fully exploited, and the number of overexploited stocks has been increasing (FAO 2002b). The problem of by-catch, which was estimated at 20 million tonnes per year, further aggravates the inability of stocks to replenish (FAO 1998). Many activities and fishing techniques, such as reef fishing, blast and poison fishing, and deep sea trawling, kill organisms on and within the

seafloor. Trawling removes important benthic structure-forming fauna and causes irreversible harm to population dynamics of the seafloor habitat (Hall 1999).

Marine Protected Areas (MPAs) are being widely promoted as an ecosystem-based approach to fisheries management problems. MPAs range from highly protected nature reserves to large multi-use areas with some limitations on specific activities. MPAs are argued to reduce fishing on spawning stocks, increase fish abundance within the reserve and increase biomass in neighboring areas. MPAs are relatively easy to monitor and enforce and have the potential to increase non-consumptive uses such as tourism and recreation. They do little, however, to protect migratory species and their biologically optimal size and number is often difficult to determine (Degnbol et al. 2004). The economic and biodiversity benefits of MPAs are also difficult to assess (Farrow 1996; Tisdell 1986).

The promised benefits of MPAs, combined with their ease of enforcement, make them an attractive fisheries management "fix" and global effort is underway to promote their use. Although there have been successful examples of co-managed MPAs (Pomeroy 2003), they are often imposed exogenously with little stakeholder input in design and implementation (Suman et al. 1999). MPAs are politically difficult measures because any large MPA will have different economic impacts on the affected fishing communities, or even on regions and nations if they are large enough (Wilson 2000).

The global crisis in fisheries has produced a strong demand for MPAs and other "technical fixes" that are seen to be feasible to impose on a large scale (Degnbol et al. 2004). Such 'fixes' are often promoted at the global level, e.g., through UN processes, rather than through regional fisheries management commissions where provisions are made for stakeholder involvement in decision making. Considerable research attention needs to be paid to how effective management tools can be implemented on a large enough scale to respond to the fisheries crisis without seeking to avoid the difficult negotiations that come with stakeholder involvement. Otherwise, the poor will have little chance to benefit from whatever conservation is achieved.

Practices in high-value aquaculture such as shrimp and salmon are also considered culprits for having damaging impacts on the ocean and coastal resources (Naylor et al. 2000). Genetic interactions of escaped alien fish stocks with wild stocks have also raised significant concerns for protecting

marine biodiversity. On the other hand, most of the aquaculture practices in developing countries, in particular finfish aquaculture of the tropics, have remained relatively less invasive to environmental integrity. These practices are usually based on the culture of low-value herbivorous/omnivorous species that rely on semi-intensive or extensive farming systems and use moderate to low levels of production inputs and feeding regimes (Williams et al. 2000). The integrity of these practices will, however, depend on the ability of the aquaculture industry to develop or adopt sustainable intensification in the coming decade.

The Plan of Implementation of the 2002 World Summit on Sustainable Development (WSSD) states that "to reverse the current trend in natural resource degradation as soon as possible, it is necessary to implement strategies which should include targets adopted at the national and, where appropriate, regional levels to protect ecosystems and to achieve integrated management of land, water and living resources, while strengthening regional, national and local capacities." Article 30 identifies the following actions that need to be taken to achieve sustainable fisheries:

(a) Maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015;
(b) Ratify or accede to and effectively implement the relevant United Nations and, where appropriate, associated regional fisheries agreements or arrangements, noting in particular the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks and the 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas;
(c) Implement the 1995 Code of Conduct for Responsible Fisheries, taking note of the special requirements of developing countries as noted in its article 5, and the relevant Food and Agriculture Organization of the United Nations (FAO) international plans of action and technical guidelines;
(d) Urgently develop and implement national, and where appropriate, regional plans of action, to put into effect the FAO international plans of action, in particular the international plan of action for the management of fishing capacity by 2005 and the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004. Establish effective monitoring, reporting and enforcement, and control of fishing

vessels, including by flag States, to further the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing;

(e) Encourage relevant regional fisheries management organizations and arrangements to give due consideration to the rights, duties and interests of coastal States and the special requirements of developing States when addressing the issue of the allocation of share of fishery resources for straddling stocks and highly migratory fish stocks, mindful of the provisions of the United Nations Convention on the Law of the Sea and the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, on the high seas and within EEZs;

(f) Eliminate subsidies that contribute to illegal, unreported and unregulated fishing and to over-capacity, while completing the efforts undertaken at WTO to clarify and improve its disciplines on fisheries subsidies, taking into account the importance of this sector to developing countries;

(g) Strengthen donor coordination and partnerships between international financial institutions, bilateral agencies and other relevant stakeholders to enable developing countries, in particular the least developed countries and small island developing States and countries with economies in transition, to develop their national, regional and sub-regional capacities for infrastructure and integrated management and the sustainable use of fisheries; and

(h) Support the sustainable development of aquaculture, including small-scale aquaculture, given its growing importance for food security and economic development.

Markets and trade

The declaration of EEZs by coastal states in the 1970s led to increases in fisheries production, making the fisheries sector one of the significant sources of export earnings in many developing countries. The developing world (including China) contributed 43.5% to the total food fish production in 1973, which increased to 50.7% and 73% in 1985 and 1997, respectively (Delgado et al. 2003). The contribution of the developing world to food fish from capture fisheries increased from 43% in 1973, to 48% and 66% in 1985 and 1997, respectively. The most dramatic increase is found in the developing countries' contribution to food fish production from aquaculture, where they contributed 57.6%, 71%, and 89% in 1973, 1985, and 1997, respectively. The increase in production is largely attributed to China.

Thailand has been the leading exporter of fishery commodities since 1992 (Tokrisna 2003a), until it was overrun by China in 2002 (FAO Yearbook of Fishery Statistics, 2002a). The relative importance of trade in fishery products from a few selected countries is shown in Table 3. It can be seen that, with the exception of India, the leading net exporting countries are in Southeast Asia, namely Indonesia, Thailand and Vietnam.

Table 3. The relative importance of trade in fishery products in selected net exporting countries in 2002.

Country	Exports	Imports	Net balance	Fishery exports as % of agricultural exports
	US $ 1 000			
Bangladesh	305 381	9 728	295 653	75.3
Vietnam	2 029 800	92 272	1 937 528	51.7
Mozambique	98 383	7 744	90 639	50.7
Cambodia	22 462	3 915	18 547	38.0
Thailand	3 676 427	1 042 103	2 634 324	31.0
Philippines	415 465	89 878	325 587	21.6
India	1 411 721	36 490	1 375 231	20.4
Indonesia	1 490 854	77 148	1 413 706	19.4
Sri Lanka	83 736	71 205	12 531	7.9
Malawi	280	277	3	0.1

Source of data: FAO Yearbook of Fishery Statistics: Summary of Tables of Fishery Statistics 2002.

Compliance with food safety standards and regulations is the current concern of many developing exporting countries, especially those exporting seafood to the United States and the European Union (EU). The relevant international agreement regulating food safety in trade is the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). Whereas the Uruguay Round of the General Agreement on Tariffs and Trade/World Trade Organization has moved towards more free trade by reducing tariff levels on agricultural food products, the concern is that food safety and quality regulations may be used as non-tariff barriers to trade (Cato 1998).

In 1997, the United States adopted the Hazard Analysis and Critical Control Point (HACCP) as its food safety program, which "requires seafood processors, repackers and warehouses – both domestic and foreign exporters to this country – to follow a modern food safety system … that focuses on identifying and preventing hazards that could cause food-borne illnesses

rather than relying on spot-checks of manufacturing processes and random sampling of finished seafood products to ensure safety" (Kurtzweil 1999). HACCP is now adopted by the Codex Alimentarius Commission as the "international standard for food safety" (United States Food and Drug Administration 2001).

Cato and Lima dos Santos (cited in Cato 1998) estimated the cost to the Bangladesh frozen shrimp industry in upgrading plants to minimum sanitary and quality standards at USD 17.6 million, and that of maintaining a HACCP plan at USD 2.2 million. For its part, the Government of Bangladesh spent USD 202 thousand in 1997, a predicted USD 181 thousand in 1998, and a predicted annual expenditure of USD 225 thousand thereafter to maintain a HACCP monitoring program (Cato 1998).

In a case study conducted under the UNDP Asia-Pacific Regional Initiative on Trade, Economic Governance, and Human Development, Tokrisna (2003a) stated that SPS measures are the most important non-tariff means facing exports from Thailand, followed by labeling. In the case of Vietnam, the non-tariff trade measure came in the form of a lobby to ban imports of Vietnamese catfish led by the Catfish Farmers of America in 2001 (Tuan 2003). A decision by the United States Congress in December 2001 banned the use of the term "catfish" unless it originated from the United States, while the Farm Security Act of 2002 issued by President George Bush made illegal the labeling of "catfish" to the Vietnamese catfish of the genus *Pangasius* (Tuan 2003). In India, the zero tolerance required by the EU market for antibiotics, such as nitrofuran and chloramphenicol, has led to cases of rejection since February 2002 of Indian shrimp exports, mainly because of technological advances in detecting traces of these substances (Matthew 2003).

Compliance with HACCP may be difficult and beyond the capacity of small-scale producers and small-scale supply/trading networks, as expressed by participants during a 2003 consultation on market access for aquaculture products (Phillips et al. 2003). This was the same argument by Matthew (2003) in the case of India, where the strict implementation of HACCP plans could lead to the exclusion from the export market of small producers using traditional fishing craft such as *kattumaram* and canoes. In the case of aquaculture products, labeling is a potential non-tariff trade barrier that would have a significant impact on small-scale producers (Phillips et al. 2003).

Cato (1998) identified the following research priorities for trade: (1) determination of the effect of implementing seafood HACCP and similar programs within countries or trading blocs on international seafood trading patterns; (2) analysis of the use and/or potential use of HACCP or similar seafood safety risk reduction or quality enhancement processes as non-tariff trade barriers; and (3) analysis of the effect of implementation of seafood HACCP and similar programs on a worldwide basis on direct foreign investment in the seafood industry.

In addition to overall trade, eco-labeling is a critical and growing aspect of marketing and conservation. Its potential importance can be seen in the most extreme case, i.e. liquid milk in Denmark, where 25% of the milk is sold with an organic label at 20-30% above the standard, non-labeled price (Saunders et al. 2004). In fisheries, eco-labeling has begun to be felt mainly through the Marine Stewardship Council, which certified its first fishery in 2000. The already impressive market power from the willingness of consumers to pay for certified products is greatly intensified by the growing concentration of power within the food trade in large supermarkets and restaurant chains. While price is still the main competitive driver of these chains, other "services" are becoming very important and this includes outlets presenting themselves as friendly to the consumer and environment (Busch 2004). This has been a driving force behind the huge growth in third-party certification schemes for agricultural production focused, inter alia, on food safety, animal welfare (with MacDonalds in the lead), and labor protection, in addition to "organic" production. These private standards are built on top of public standards, not as substitutes. While low margins on the consumer side leads to intense competition among the chains, their oligopoly power vis-à-vis their suppliers makes it easy for them to push the costs of certification on to wholesalers and farmers (Busch 2004). A result has been an intensification of the "multifunctionality" (meaning that the farming sector is expected to perform multiple functions in rural stewardship) trend in agriculture, which has also been a focus of government rural development policy. The huge number and variety of different fisheries has meant that eco-labeling has had a slow start, but the experience in agriculture suggests that its future importance may be very large. The Marine Stewardship Council (MSC) criteria for certification are already "multifunctional" and a critical motivation for MSC certification, at least in Great Britain, has been pressure from the major supermarket chains (Wilson et al. 2002).

Phillips et al. (2003) outlined the following issues and key points that need to be addressed and considered concerning international trade in aquaculture products:

- Importance of aquaculture and fisheries
  - Importance as food and livelihood.
  - Diversity of linkages between fisheries and aquaculture and livelihoods of rural people.
  - Stakeholders involved and their participation in policy and trade discussions.
- Asia being the major producer of aquaculture products
  - Asia contributing 90% to global aquaculture production.
  - Increasing trade-related constraints on aquaculture products, and the need for awareness raising and action to address these.
- Sanitary and phytosanitary (SPS) issues
  - Application of HACCP moving down the production chain from processing plants to producers, and may later include inputs such as feed and seed.
  - Compliance possibly costly and difficult for small-scale producers.
  - Importance of cooperation among Asian countries to develop "common positions" and putting these forward to international standard setting bodies.
  - Awareness raising and capacity building among governments, the private sector, fisheries agencies, and those involved in trade negotiations.
- Certification of aquaculture products
  - Potential of labeling to become a non-tariff trade barrier and implications for small-scale producers.
  - Certification may support responsible and sustainable development of aquaculture, if sensitive to the needs of small-scale producers in developing countries.
  - Active participation of Asia essential to the development of fair and harmonized approaches to certification.
- Market chains
  - Vertical integration of market chains according to "farm to plate" philosophy.
  - Strict food safety requirements and SPS measures being borne by producers.
- Building the right institutions
  - Traditional fisheries and aquaculture institutions not yet well

equipped to address issues surrounding trade and aquaculture products.

- Needs:
  - for institutional and policy change, with emphasis on empowering farmers and farming groups to organize, e.g. self-help groups to bring small-scale producers together;
  - for improving national, regional and international cooperation to share information on markets and trade in aquaculture products;
  - for assurance that those who are involved in trade negotiations are informed about relevant issues in fisheries and aquaculture; and
  - for cooperation between the private and public sectors.

Multilateral environmental agreements and trade

The following multilateral environmental agreements (MEAs) have been identified by Tokrisna (2003a:45; 2003b:13), Tuan (2003:33), and Matthew (2003:16-17) in their respective case studies of Thailand, Vietnam, and India, as having an impact on the fisheries trade:

- Convention on International Trade in Endangered Species (CITES), 1975
- Montreal Protocol, 1987
- Basel Convention, 1992
- Convention on Biological Diversity (CBD), 1993
- Framework Convention on Climate Change (FCCC), 1994
- Kyoto Protocol, 1997
- Prior Informed Consent (PIC), 1998
- Cartagena Protocol on Bio-Safety, 2000
- Ramsar Convention, 1972
- Convention on the Conservation of Antarctic Marine Living Resources, 1980
- UN Fish Stocks Agreement, 1995
- FAO Code of Conduct for Responsible Fisheries, 1995

Market access and the poor

Poor people lack access to markets, and often suffer from disadvantages caused by the uneven distribution of resources. Women, who traditionally participated in the marketing and processing of fishery commodities, are being cut-off from the supply chain due to changing requirements of supply, use of new technologies and the demand patterns for products. The

compounding effects of food safety regulations, such as SPS, HACCP processes, and technical barriers to trade (TBT) have already introduced high costs that tend to exclude small-scale producers and processors from the export supply chain (Dey et al. 2004; Cato and Santos 1998). Traditional market chains that are usually long may no longer be viable for the poor, and in effect make it costly for many developing countries to compete in the world market. Poor fishers and fish farmers in the developing world need assistance and support to adopt improved technology for efficient management to minimize the cost of HACCP processes in order to realize benefit from fish trade.

In addition, the growth in fish trade has both positive and negative impacts on the livelihoods of the poor fishers and farmers in the developing countries. Diversion of a significant amount of food fish from the local communities and from the developing regions may have harmful effects on the poor adults and children, and the extended fishing families (Kent 1995). This deprives them of their traditional right to have a cheaper source of nutritious food, especially when the diversion occurs without increasing the supply of fish within the local communities (FAO 2000). Micro-level studies indicate that more than half of the children of fishing families are stunted in Indonesia (Gross et al. 1993), and there exists a high level of infant mortality in Indian coastal fishing villages (Kumary 1991). Ironically, both these countries are among the leading exporters of fish and fish products in Asia.

At the household level, the greater the dependence on fishing for income, the greater is the participation in market exchange. Many fishing households are landless and depend on the sale of fish and seafood products to buy necessities such as rice, or to pay for social services. The trade and marketing of fish and fishery products in many fishing communities is still mediated by fish traders and buyers who are at the same time the source of credit of many small-scale fishing households.

While it is difficult to measure the specific impacts of the expansion of fish trading on small-scale and/or subsistence fisheries, a comparative analysis of the impacts of the international market for Nile perch on Lake Victoria was undertaken at a time when these impacts were being felt heavily in the more accessible parts of the lake, but before they had begun to have a significant impact on the less accessible areas (Wilson et al. 1999). On isolated beaches, where factories processing perch for export were intermittent customers, the bidding of local consumers, tiny enterprises serving the local region, and larger national traders resulted in a fairly even distribution between

these markets. Where the factories had established a strong presence, they took the majority of the fish. In addition to taking most of the resource, the international market changed the distribution of harvesting capacity in the local fishing industry. A smaller group of large fishing operations came to take more control of the fishing power. The gap between the richest and the poorest on landing beaches, measured by meters of gill net owned, was much higher. Credit schemes through which the processing factories provided gear to fishers, in combination with management measures, created new risk for the artisanal fishers. The flexibility of a multiple gear fishery disappeared while the risk of gear theft increased dramatically. The credit agreements placed the risk of the investment in harvesting equipment on the fisher while tying the fisher to a factory as a quasi-employee. The gap between the owning and laboring classes within the industry also grew. While crew members in areas integrated into the international market made 1.6 times as much as crew on isolated beaches, the owners on isolated beaches got 3.75 times the average crew income, while owners on integrated beaches got 7.3 times as much. All of these changes raise concerns about the link between fisheries development and the condition of the poor.

Governance – a key factor

In both developed and developing countries, politicians can establish policies and promote institutions that will lead to the most sustainable management of fish resources while also ensuring the survival of small-scale producers. High dependence on the fisheries sector for foreign exchange earnings and provision of animal protein does not always lead to its articulation into national development plans and/or poverty reduction strategy papers in developing countries (Thorpe et al. 2005). To improve policy outcomes in the developing countries, policy makers in the developed countries should rationalize their food safety systems for seafood imports, harmonize and modernize tariff classifications and offer technical assistance in eco-labeling and food safety to small-scale fish exporters. The focus of demand-side policies in developing countries should be to facilitate south-south trade on low-value food fish, to provide public goods to assure domestic food safety, and to help ensure that fish products reach those in developing countries who need them the most. Poverty reduction, inclusive development and environmental protection must increasingly become central themes in the dialogues among advocates for the poor and the environment, representatives of the fishing industry, and political leaders and international policy makers.

Participation, accountability, coherence and effectiveness are the hallmarks of good fisheries governance (Reyntjens and Wilson 2004). Governance, as opposed to government, is the process by which economic and social matters are managed and the capacity of the institutions to manage them fairly, rationally and predictably. Governance is about institutional performance and the relationships among state, market and society. It should not be equated with or confined to state activities. The governance perspective examines the broad range of institutions that influence how public policy goals are met or fail to be met. Scale is the most important variable in respect to governance because it is the key determinate of how any institution communicates information and structures decision-making (Wilson 2003a).

Stakeholder groups understand "participation" in different ways. Three basic understandings of participation among fisheries stakeholders are: participation as working together to achieve common fisheries policy goals, participation as mobilizing one's own stakeholder group to achieve their own narrow goals, and participation as a mechanism for holding the management system accountable (Wilson and McCay 1998). While these perceptions emerged from systematic research in the US, similar concepts of participation in fisheries are evident in different forms in most fisheries. "Participatory" is a polite way to say "political". To be able to develop effective policies, and the research about institutions to support them, fisheries management should be understood as first and foremost a political process, in which people are making decisions about how to relate to resources, and secondarily as the technical process that produces the information on which the decisions should be based. Politics is not a problem for management; management is politics.

Accountability and transparency are two sides of the same coin as the importance of transparency is that it makes accountability possible. Both downward and upward accountability are critical for effective governance. Downward accountability means that stakeholders operating on a local scale are able to hold people making large-scale decisions accountable for minimizing the costs of conservation to the local level and for recognizing and, if necessary, facilitating a clear and fair process for local-level decision making. Upward accountability means that the higher level holds the local level accountable for behavior that leads to sustainable resource use (i.e. enforcement and compliance) and for the provision of accurate and useful information about local social, environmental and fishery conditions (i.e. monitoring).

Coherence requires that policy objectives do not contradict one another. This is crucial for linking poverty reduction and conservation policies. Biological sustainability must come first, but unless coherent social policies are linked to conservation, then the gains from conservation will only benefit a few. There is a real tendency for conservation policies to disproportionately benefit the members of the fishing industry that have the greatest flexibility over a long time period, and this same group tends to have the deepest pockets.

Effectiveness in fisheries governance begins with an accurate, and shared, picture of the condition of the resource and of the social conditions around the fishery. This leads to some of the most intractable problems with fisheries management, especially in areas where there are large numbers of poor fishers. Fishers possess considerable amounts of experience-based knowledge that is mainly tacit (not easily articulated) and that has significant, but indirect, relevance for management. For management to be effective it needs to be understood by fishers and must not contradict their understanding of the condition of the resource. But the fisher's understanding of the resource is based on limited personal experience, unsystematic and difficult to justify and explain, and shaped by the problems of catching fish, not of conserving them. This leads to wide gaps that can only be addressed by ongoing dialogue between managers, scientists, fishers and other local people (Wilson 2003b).

Beyond all of these considerations within fisheries management, the overall governance context cannot be ignored. Increasingly, lack of good governance and true democracy, that empower poor people rather than strengthens those in power, are recognized as the most important factors hindering progress toward the eradication of poverty and hunger in many parts of the world. Corruption stemming from illegitimate and undemocratic political governments has produced adverse consequences for economic, financial and resource management in many countries. It has created social, cultural, ethnic and religious rifts within nation states. International efforts to eliminate poverty and hunger should make a more forceful statement in promoting good governance and grassroots democracy. Fisheries governance can only improve along with a simultaneous improvement of the overall governance.

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2 Governance and Institutional Changes in Mozambique

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Background

Geographical Context

Mozambique occupies an area of around 800 000 km^2 on the southeast coast of Africa, sharing boundaries with South Africa, Swaziland, Zambia, Malawi and Tanzania. The country has a coastline of 2 750 km on the Indian Ocean, and is well served by 25 major rivers and several deep ports. The coastal plain is broad and characterized in many places by large delta and low-lying riverine areas, several of which are susceptible to flooding. About 80% of the country's 17.6 million people live in rural areas. The central and northern provinces are characterized by fertile soils and plentiful rainfall, but poor accessibility. In the southern provinces, soils are poor and rain-fed production marginal, but accessibility is relatively good particularly to Maputo, the nation's capital and largest market, as well as to South Africa.

Historical Context

Mozambique won its independence in 1975. However, the exodus of most Portuguese settlers and Asian traders, subsequent adoption of central planning and nationalization of major enterprises, and the civil war from the late 1970s to early 1990s resulted in a collapse in production, and heavy dependence on foreign aid. Only after the peace settlement in 1992 was Mozambique able to effectively pursue economic policies based on privatization of public expenditure and fiscal balance. Since 1992, the Government has won a well-earned reputation for prudent macro-economic management and its commitment to rural poverty alleviation, a positive picture that was only disrupted by the serious floods that affected much of the country in 2000 and 2001.

Since the country's accord, Mozambique has made major strides in the area of governance. A stable multi-party democracy has been established and consolidated; political and economic decentralization has proceeded, albeit very gradually; the constitution was substantially revised in 1990 and the

second one is going through an open process of public hearings to achieve a better balance of power in the state apparatus; and legislation has been passed in areas such as governance ethics.

The economy

Mozambique is one of the world's poorest countries, with 70% of the population living below the poverty line. Yet, the country is rich in under-exploited resources. Peace, better policies, rising foreign investment and continued external assistance have contributed to encouraging economic performance and the creation of an environment in which these resources can be developed. Real gross domestic product (GDP) has been increased to an annual average of 10% since 1996.

The value of exports from all the sectors has increased substantially and more rapidly than imports. Annual inflation declined from 70% in 1994 to less than 1% in 1998, and hovered at 4% in 1999-2000 as the government relaxed its monetary policy. Nevertheless, severe flooding and other factors have later resulted in inflation rising to 9%. However, confidence in the economy is strong and private investments had been growing over the past few years, and were expected to reach more than 25% of GDP in 2002.

The Government's Poverty Reduction Strategy Paper approved by the Cabinet aims to reduce absolute poverty by 30% in 2009. The strategy emphasizes the promotion of economic stability and broad-based high-level growth (based on the development of manufacturing and construction sectors and increased agricultural productivity); improved access to education, water, health and sanitation, and the development of rural infrastructure; promotion of self-employment; and protection of vulnerable groups.

Institutional changes in fisheries

Mozambique has gone through three distinct "development" cycles:

1. Pre-colonization up to the 16th century.
2. Colonization under Portuguese control and economic system, which varied according to colonial interests in Africa (up to 1975).
3. Post-colonization after independence.

The latter period is characterized by two different economic systems: socialist planned economy where popular participation was the central strategy (1975–89), and open economic market system (1990 – onwards).

The fisheries sector followed the changes in socio-economic and political strategy. In the first five years after independence, the fisheries sector was integrated into the Ministry of Energy and Industry as a National Directorate. During this period, like all other economic sectors, the fisheries was centrally planned and managed and no stakeholder consultation was considered. The political "order" was to produce as much fish as possible to supply the national market, as the country was having problems with food security during that time. Production had a higher priority than management.

In the late 1980s, Mozambique adopted the Structural Adjustment Program (SAP) under IMF/World Bank support. The impact in the fishing sector was huge. A State Secretariat for Fisheries was created and the "father state" for fishers and fisheries ended as the market forces policy took over. The state of the fishery resources became the main domain of the new body.

Thus, studies were conducted to evaluate various fisheries programs and projects implemented during the previous two decades to draw lessons and propose appropriate future interventions. The conclusion from this evaluation was that the scenario in resource use and fisheries management was worrisome. Through this assessment, a Fisheries Master Plan (FMP) was developed and approved by the Mozambican Government in 1994. The process of elaboration of the FMP involved many central fisheries institutions, fishing communities and other stakeholders.

The FMP laid out the priorities and strategies for development to be pursued in subsequent years. With regards to the management of small-scale fisheries, the Master Plan lays emphasis on the involvement of fishers[1] in setting and enforcing management regimes. It was recommended that there was an urgent need to change the scenario through more careful and approaches involving wider consultation and active participation of

[1] One should be aware that participation may be more real and efficient in a socialist system than in an open market economy. World economy is about efficiency and profit; hence participation may not be an efficient model as it is time-consuming (i.e., meetings, people not agreeing and thus blocking decisions, and so on). So, co-management is also facing this tension as it is about capacity building both in the communities and government sector and needs huge funds and a long time to be implemented efficiently. We all know that with an open market policy, the state is obliged to cut some social services and benefits that can jeopardize participation.

beneficiaries. In other words, the studies recommended the establishment of co-management mechanisms in fisheries management.

In 1996, the Fisheries Policy was approved, followed by the design of an action plan that provided the overall strategic perspective for FMP implementation. In 2002, a Fisheries Development Plan (FDP) was designed and approved, setting up medium-term priorities for the period 2002-2006. Also, during 2002-2003, a strategic plan for co-management implementation was elaborated and discussed, which is now used as a main tool in this field.

Since 2000, an independent ministry, the Ministry of Fisheries, has coordinated the fisheries sector. This initiative by the Government could be interpreted in two different ways:

1. The fishing industry is increasingly considered economically important.
2. Fisheries were not included in the sectoral program being established in cooperation with a number of external development partners.

The ministry is composed of three National Directorates (Administration, Economy and Human Resources) and three autonomous units (Administration and Finance, International Cooperation and Fisheries Inspection). In addition, there are four autonomous administrative institutions, namely: Fisheries Development Fund (FFP), National Institute for Small Scale Fisheries Development (IDPPE), National Institute for Fisheries Research (IIP), and the Fisheries School (EP).

At the provincial level, the ministry is represented by the Provincial Directorates for Fisheries (SPAPs), whose main task is to monitor and control fisheries activities. In addition, the National Institute for Small Scale Fisheries Development (IDPPE) and National Institute for Fisheries Research (IIP) have representatives at the provincial level. The Maritime Administration (ADMAR) is an institution under the Ministry of Transport and Communication that has authority, delegated through the Ministry of Fisheries, to take care of fisheries controls and surveillance of artisanal fisheries.

Thus, IDPPE (through fishing extension services), IIP (through biological research), FFP (through financial services), ADMAR and SPAP (through fisheries management and administration), are the main institutions dealing with the artisanal fisheries sector in Mozambique.

Role of donors in institutional changes

Donor support in the fisheries sector dates back to the country's independence. Support has been given in many different forms, reflecting shifting priorities by either cooperating partners and/or by the Government, as well as the shifting focus on fisheries matters in the global society.

From 1994 to 2004, support has been set within the framework of institutional cooperation among the relevant institutions, i.e., National Directorate for Fisheries (DNAP); the National Institute for Fisheries Research (IIP); the National Institute for Small-Scale Fisheries Development (IDPPE), and the Fish Inspection Department with the main traditional partners: NORAD,[2] DANIDA,[3] FRENCH COOPERATION, ICEIDA[4] (Iceland), Japan, and Spain. Through agreements involving the Government and different funding agencies like IFAD[5] and AfDB[6], as well as country donors such as Belgium, Italy and Norway, important support towards the implementation of artisanal fisheries development projects were secured.

It is important to mention the bilateral agreements that have been signed or are being negotiated with Namibia (joint ventures / reciprocal fishing opportunities), Mauritius (for institutional support), the European Union (EU) (for financial compensation/fishing opportunities in Mozambican territorial waters), Cuba (for technical assistance), and South Africa (for institutional and economical collaboration). This type of cooperation is generally aimed at the development of institutional capacity for fisheries management, research, and development for artisanal fisheries, including capacity building for communities. One can conclude that these partnerships have assisted Mozambique in important achievements in institutional changes, management of the country's fisheries resources, as well as the development of artisanal fisheries.

[2] Norwegian Agency for Development
[3] Danish International Development Agency
[4] Icelandic Agency for Development
[5] International Fund for Agriculture Development
[6] African Development Bank

Role of fishing and aquaculture industry

Main features

The fisheries sector is characterized by the following diversity:

a) **Artisanal:** Using boats less than 10 m long, motorized and non-motorized canoes, with daily trips. This type of fisheries is mainly dominated by traditional fishing methods. Two groups can be observed, namely, owners and workers. The largest number is comprised of skippers and workers/crew members. There is also a large group of people involved in fisheries activities that support the fishers, such as boat building, net making, fish preservation and trading.

The composition of the artisanal fleet shows some variations between the census done by IDPPE from 1990 to 1995 and other studies done up to 1994. In the former, 12 740 boats were registered from 787 fishing centers, whereas in the latter, the maximum count was 19 410 boats and the minimum was 11 886. Of the latter figures, 70% were canoes and 3-5% were motorized (IDPPE 2001). The main artisanal fishing gears are: beach seine, gillnet, beach seine, hook and line, and traps. The predominance of "marine hunting" is considerable.

The artisanal fishery is of significant importance in terms of food supply and income generation for local fishers and their families. Nevertheless, the per capita fish consumption is about 6 kg per annum. It is estimated that the fisheries sector employs around 100 000 people, of whom 90% are fishers.

b) **Semi-industrial:** The available information indicates a total of 87 semi-industrial boats, most of which are based mainly in the Beira and Maputo areas. The boat size used is 10-20 m long, and the motor is of less than 350 HP with freezing and ice conservation systems, for trips of around seven days at sea. Different fishing gears are used such as bottom trawl nets, gill nets, long lines, hook and line, seine nets, and other fishing gears to capture large pelagic fish, sharks, and bottom fish.

c) **Industrial:** The industrial fishery is made up of large trawl vessels equipped with deep freeze facilities and make monthly trips at the main fishing area, Sofala Bank. This fishery is especially oriented to shallow

water bottom trawling (although this is shared by semi-industrial and artisanal fishing fleets) and is aimed at exporting that is managed by Mozambique-foreign joint venture companies.

Strategic importance of fisheries

The fisheries sector represents only 3% of Mozambique's GDP, but contributed about US$ 160 million to the country's economy in 2003. Mozambique's fish exports, valued at approximately US$ 74 million in 2003, contributed about 28% of exports and 12% of foreign exchange earnings. Over 85% of the value of exports is made by industrial shallow water shrimp, which is the most important fishery in the country. The main markets are the EU, Japan and South Africa.

Marine fisheries represent more than 80% of the country's total production and virtually all exports of fish products. It is well known that many coastal fisheries play a crucial role as economic buffers in periods of few sources of food and income. About 90 000 people are involved directly in fishing, gathering, fish processing and marketing. Marine fisheries provide more than 90% of the jobs in the sector. With over two-thirds of the population within 150 km of the coast, about 50% of the people's protein intake is estimated to come from fish. Thus, fishing is important for meeting the objectives of food security and poverty alleviation.

Overall, it is estimated that the country uses only about 25% of its exploitable fish resources (FAO 2000). The fisheries in Mozambique has ample scope, and it is expanding and contributing further to the national economy in terms of increased value added and export earnings, as well as improved living standards of fishing communities and related industries.

Aquaculture has not been a traditional activity for food supply in Mozambique, but is now a growing segment of Mozambican fisheries. One of the sectoral objectives is to improve the supply of fish in the domestic market, increase earnings, and create new jobs through the development of marine and freshwater aquaculture. Opportunities for aquaculture include the production of marine shrimps (420 tonnes in 2003) and seaweeds (240 tonnes in 2003), and small-scale pond production in rural areas (100 tonnes in 2003).

Resources and trends

Some 1 500 fish species exist in Mozambican marine water; 400 of these are of direct commercial importance. Even though there are no recent figures on the sustainable catch of fish, in 1995 this was estimated at over 350 000 mt. However, only 25% of this resource was utilized. Pelagic and demersal species offer possibilities for increased expansion. Large demersal and pelagic fish associated with deeper waters are of particularly high value and can command high prices in the domestic market and abroad. According to the production nomenclature used in Mozambique, this type of fish is known as the first category fish. The others are known as second and third categories. The yearly average catch rates from 1977 to 2000 showed a decreasing trend, while effort increased. For the same period, the total catch showed some fluctuations, with lower catches between 1990 and 1994. The same behavior is noted for catch by species. For a long-term perspective, higher average catches and higher mean sizes should be obtained through reducing effort to 180 000 standardized hours (14% reduction from the actual 2000 level of effort).

Main fisheries legislation and measures

Among the several fisheries legislations approved by the Government, it is important to mention the legal framework regulating co-management. The legislation providing a legal basis for the functioning of co-management systems is now in place. The only items that took additional time were the regulations defining structure and functions of the local committees (the fisheries community councils) and the co-management structures at the provincial and district levels. These were approved in late 2004.

Fisheries legislation

- 1976 Declaration of 200 nm EEZ
- 1978 Legal framework for foreign vessels operating in Mozambican waters
- 1990 Fisheries Law
- 1997 General maritime fishery regulations (which include the creation of the Fisheries Management Council (CAP), an advisory body to the Minister of Fisheries regarding fisheries management
- 1999 Leisure and sport fishing regulations
- 2001 General aquaculture regulations

- 2001 Quality control regulations
- 2003 New general maritime fishery regulations (where co-management is finally legally recognized)

Management measures

- Total Allowable Catch (TAC), determined by the Minister with the advice of the Fisheries Advisory Committee
- Quota, which is annual and non-transferable
- Closed entry for shrimp fishery
- Closed season for shrimp fishery (15 December to 15 March)
- Fishing license (annual and non-transferable)
- Open access for artisanal fisheries being the only license pre-condition

The future of fisheries: Institutions, poverty reduction and environmental sustainability

Institutionally, there is an encouraging environment with which to face the future, especially if the following developments are taken into consideration:

- Improvement of capacity in the Ministry of Fisheries (MoF) (including training and education of scientific and technical staff, and the development of fisheries and aquaculture regulations).
- Establishment of the legal framework for co-management and the (encouraging) involvement of both the private sector and local communities in the co-management process.
- Improvement of capacity in data collection and handling, including the capacity to conduct assessment and advisory input for the most important fisheries.
- Introduction of a satellite-based vessel monitoring system (VMS) as an important input to the development of an effective monitoring, control and surveillance system in the country's waters.

The approval of the legal framework for co-management led to the establishment of the Fisheries Management Council (CAP), a ministerial advisory body composed of fisheries institution representatives, industry representatives and fisheries stakeholders, including representatives of the artisanal sector, which meets at a regular basis (quarterly). This is a valuable instrument towards better resource and fisheries ecosystem management.

Coastal fisheries play a crucial role as economic buffers to most of the coastal population. Entry and exit dynamics in fisheries reflect the opportunity cost of labor in the country. Reducing the level of absolute poverty is one of the main objectives of Mozambican fisheries policy, and the development of artisanal fisheries is consistent with these objectives.

The establishment of a legal framework regulating the area within the first three miles of the coastline for artisanal fisheries is an important step to secure small-scale fishers' access to resources. The VMS surveillance of industrial fleets is equally an achievement, although it will not provide a full-fledged control system. The importance of contact, advice and exchange of information and learning cannot be underestimated in a sector as diverse and complex as fisheries. Thus, there is a need to follow up these achievements in order to make sure that artisanal fishers will benefit in practice. However, the problem of limited market outlets in certain areas of the coast means that, even as a buffer, the sector may not provide sustainable and better livelihoods for fishing families. In other words, the development of artisanal fisheries is linked to development of other sectors.

There are positive and encouraging developments, but there is a need for institutional development in management, research, planning and monitoring, as well as other aspects of the sector.

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3 Governance and Institutional Changes in Malawi Fisheries: Impact on Poverty Reduction and Environmental Integrity

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Introduction

Malawi is a landlocked country with a total area of 119 140 km^2, of which about 23 900 km^2 (20%) is water (FAO 1994). This is dominated by Lake Malawi, but includes the very productive Lakes Malombe, Chilwa, Chiuta, the Shire River and associated marshes (Figure 1). About 56% of the land area is arable.

The fisheries sector in Malawi is an important source of employment, rural income, food security, import substitution and biodiversity. Living aquatic resources provide somewhere between 60-70% of the nation's animal protein supply and nearly 40% of the total protein supply (GOM 1994). Much of the fish is consumed in rural areas and thus contributes to the nutritional needs of some of the poorest people in the country.

The fisheries sector contribution of 3% to the Gross Domestic Product (GDP) is relatively small compared to that of agriculture, about 3%, and provides employment for about 40 000 people and a livelihood for about 200 000 who work in ancillary activities (FAO 1999).

The fisheries are multi-species and multi-gear, involving a number of exploitation techniques to harvest numerous species. They are categorically divided into two types: the artisanal or traditional fisheries and the commercial fisheries. The artisanal fisheries account for 85-95% of the total fish landings in Malawi (GOM 1994).

Paradigm shifts

There are three fisheries management paradigms: conservation, rationalization and social/community paradigms (Charles 1992). The conservation paradigm has a biologically-based management philosophy that focuses on the protection of fish stocks, and has its roots in the concepts of Maximum Sustainable Yield (MSY). The rationalization paradigm focuses on economic efficiency and wealth creation in the fishery, while the social paradigm concentrates on community welfare, distributional equity, and other social and cultural fishery benefits.

Figure 1. Map of Malawi showing major fishing waters.

Fishery managers in Malawi, just like others worldwide, have been confronted with three major issues that pose huge dilemmas in fisheries management, namely:

1. Continued availability of fish in the waters to sustain fishing activities.
2. Optimization of fish catch in order to obtain the best returns for the fishing effort.
3. Consideration of the role of the fishery in food security, provision of employment and cultural affiliation to the fishery by the fishing communities.

Fisheries management approaches worldwide have been dominated by the centralized government-based approach with a strong emphasis on conservation. As a result, governments have been the main decision-making bodies on how most fisheries resources should be managed. This form of fisheries management has proved ineffective because the costs of implementation and enforcement have often been high (Townsend 1995), and led to the collapse of fish stocks in many parts of the world. Although the best way to manage the world's fisheries is not always easily identified (OECD 1996), the current and growing trend in fisheries management has been to adopt the resource user participatory approach (co-management) that belongs to the social/community paradigm.

In Malawi, the Department of Fisheries (DoF) management policies have been influenced by the principles of the conservation paradigm, i.e., a centralized, biologically-led approach. As such, one of its sectoral policy objectives is to maximize the sustainable yield from fish stocks that can economically be exploited from the natural waters. To achieve its objectives, the DoF, like any other government natural resource manager, formulated management

regulations based on biological research findings. The conceptual background to this approach is based on the theories of MSY.

The approach has been centered at the national level, with lower degrees or none at all of user participation. In this paper, the terms user and resource user are employed interchangeably with fishing communities. The major costs of this kind of fishery management approach are the transaction costs (Hanna 1995), which involve the costs of gathering information, designing regulations, coordinating participants, monitoring conditions and enforcing regulations. In the short run, this approach is said to be less time-consuming and less costly to set up because in the establishment phase, the approach relies on a small number of experts to gather the initial information, design the regulations, and involves very little participation by resource users. In the long run, the approach is more costly and less sustainable because there is a shift in the transaction costs. The costs of monitoring and enforcement are high since the approach creates an incentive for users to sabotage the program because uncertainty about the goals of the process tends to shorten the time horizons of the users, encouraging short-term actions at the expense of long-term sustainability (Hanna 1995).

In Malawi, the government-centered approach guided by the conservation paradigm has proved disastrous and created more problems than it solved. While it reduced the transaction costs of having to strike bargains with user communities, it set up a barrier between the managers and resource users. As a result, there was poor communication between managers and resource users, dissatisfaction and low compliance by the resource users, and less informed fishery management decisions were experienced.

In the early 1990s, the DoF changed its management approach from the centralized government system to the resource user participatory approach. Since then, this new approach has only been applied to pilot sites in Malawi − Lakes Malombe, Chiuta and Chilwa. In view of this change in the approach to fisheries management, the National Fisheries Policy and Fisheries Act was revised to accommodate the participation of resource users. The current National Fisheries and Aquaculture Policy, under the section on participatory fisheries management, aims at establishing and sustaining the co-management of fisheries resources between the Department of Fisheries and key stakeholders (e.g., fishing communities, traditional leaders) in order to achieve sustainable exploitation of aquatic resource management for the artisanal fisheries. There are two main objectives under this section, namely: a) to achieve the active participation of local fishing communities in the

management of the fish resources; and b) to provide legal instruments and procedures for the participation of local fisheries management authorities in the management of the fish resources.

The Fisheries Act provides for the formation of Local Fisheries Management Authorities (LFMAs) that encompass the Beach Village Committees (BVCs) and the Lake Fishers Associations (e.g., Lake Malombe Fishers Association, or Lake Chiuta and Chilwa Fishers Associations). These committees and associations are then empowered by entering into management agreements with the DoF and the LFMAs.

Institutional changes in fisheries

Co-management in Malawi was introduced on Lake Malombe as a pilot program in 1993 and emerged on Lake Chiuta in 1995. Lakes Malombe and Chiuta are small water bodies in the southern part of Malawi. The introduction of co-management was in response to a particular crisis in each lake. The government initiated the former while fishers themselves initiated the latter. In Lake Malombe, it was introduced to control the problem of declining fish catch, while in Lake Chiuta, it was to exclude seine net fishers thought to be using destructive fishing gears. Because of these differing motivations, the two cases offer an important comparative base within Malawi on how the formulation backgrounds of such partnerships can impact institutional and organizational changes as well as the outcomes of the management regimes.

The introduction of fisheries co-management brought in organizational and institutional changes in the management of the fisheries. Co-management requires the involvement of both the government and resource users in the management of the resources. Therefore, implementation requires the existence of some forms of resource users groups, with which the government can co-ordinate (Sandersen 1996). Where they do not exist, these groups need to be established (Jentoft 1989), and where they do, the government must formally recognize, strengthen or reorganize them so that they can carry out their new functions.

In Lake Malombe there was no representative body for the fishers' interests (Bell and Donda 1993). Based on the recommendations of a feasibility study by Bell and Donda (1993), a new organizational structure was proposed to

be created within the DoF for the implementation of the Lake Malombe co-management activities. The new structure was named the Community Fisheries Management Unit (CFMU), and was based at the Mangochi district office. Within the CFMU, a sub-unit, called the Community Liaison Unit (CLU), was set up, that was directly involved with the implementation of co-management activities at the community level. A CLU representative was situated in the fishing villages.

On the user community side, the formation of the user community representative groups, the Beach Village Committees (BVCs), was facilitated by the Community Liaison Unit (CLU) towards the end of 1993. These BVCs had to be formed because none of the existing organisations within the fishing communities represented the fishers' interests. The fishing communities of prime interest were the riparian villages, and representatives from one or more villages would form a committee, hence they were called Beach Village Committees. A higher coordinating body for the BVCs was formed; this was called the Lake Malombe Fishermen Association. The DoF also initiated the idea to form this association.

Before the development of co-management in Lake Chiuta, there were no formal management plans for the lake. The idea for the formation of BVCs originally came from the fishers themselves. The first fishers' pressure group formed on Misala beach against seine net fishers on the lake facilitated the formation of pressure groups on other beaches. It was then referred to by the fishers as the "big committee". Later on these pressure groups were turned into beach village committees, and the big committee, with some modifications, became the Lake Chiuta Fishermen Association (LCFA).

The idea for the formation of the LCFA was introduced by the DoF in a move to consolidate and coordinate activities of the BVCs. The LCFA was meant to serve as a mother body of all BVCs around the lake, and it was viewed as an intermediary between the BVCs and the DoF. Each BVC was asked to elect one member as its representative to join the association. As a result, the association has nine voting members (from nine BVCs) and two non-voting members who are village headmen. All the nine members are fishers with the exception of the two village headmen who are ex-officios. The Association was established with the aim of coordinating and establishing collaboration among the member BVCs through:

- Conducting meetings with the BVCs on how they can protect the fish stocks
- Resolving conflicts among the BVCs that quarrel
- Checking and coordinating the activities of all the BVCs
- Applying sanctions on offenders

The Association has powers to formulate and implement rules and regulations to guide its functions as well as the general behavior of its members and the BVCs.

The formulation and review of formal fishing regulations for the lakes jointly carried out by the DoF, fishermen's associations, and the BVCs followed the introduction of co-management in both Lakes Malombe and Chiuta. The resultant regulations were later gazetted as official fishing regulations for the lakes. This action was legally supported by the Fisheries Conservation and Management Act passed in Parliament in 1997, a review of which had been initiated to accommodate the proper introduction of co-management in Malawi and to empower fishing communities to participate in fisheries management.

In Lake Malombe, the introduction of co-management was taken as a welcome approach in the sense that it was intended to help solve the problem of declining fish catches, which was a concern of all fishers. A slightly differently response was experienced in Lake Chiuta where fishers with different fishing gears responded differently. For example, indigenous fishers with gillnets and fishing traps were in favor of the approach while those fishers who brought in seine nets into the lake from other lakes did not like it because the fishing regulations no longer allowed them to fish in the lake. Lake Chiuta brought in another dimension to the whole approach in co-management, since it is a shared lake between Malawi and Mozambique. The introduction of co-management in the lake on the Malawian side subsequently resulted in some cross-border misunderstandings, as the Mozambican fishers were not initially involved in the co-management program. It took a number of joint management meetings at the local level to resolve the conflicts.

Institutional changes and impact on poverty reduction

In Malawi, fish provides the livelihood for approximately 10% of the country's population, and about 40% of the total protein supply. The

introduction of co-management helped to raise awareness among the resource users on the status of the fish stocks and how this can be made sustainable through their participation in the development of fishing regulations.

The rural majority, who make up the bulk of the fishing communities, are beginning to face new challenges as the demand and supply patterns begin to change due to increasing fish demand partly caused by increasing human population and declining fish catches from capture fisheries. The fishing communities may not be able to consume the desired quantities as the prices of fish rise because of the increasing demand and the greater competition in accessing fish at the beach. Besides, fishers have to sell off all their catches in order to earn more. Market prices are now becoming a driving force to change the behavioral patterns of fishers, and directly affect how fishers respond to the fishing regulations in force.

In Lake Malombe, crewmembers who in most cases do not own fishing gears, are beginning to dictate when seine nets (*nkacha*) have to go out fishing and at what frequency. They also control the sale of fish when landed, and gear owners who do not go out fishing themselves have little to say about when their gear will be used for fishing and at what price the catch will be sold. Initially, these people were not considered important enough to become members of the BVCs. Other BVCs have now started thinking seriously about having these people become BVC members.

Realizing the constraints that capture fisheries are facing in satisfying the demand for fish, the DoF has embarked on a program to intensify the adoption of fish farming and promotion of fish production from ponds. It is thought that this will supplement production and relieve some of the pressure from capture fisheries. The end result will, therefore, be the sustained use of fishery resources and, at the same time, stimulate economic growth at the micro-level. This should contribute to poverty reduction and food security development objectives of the country.

Role of fishers and aquaculture farmers in institutional change

Fair user representation was found to be one of the major determining factors that made the fishers accept or reject the fishing regulations formulated between the DoF and the BVCs as legitimate or illegitimate.

It was also discovered that the BVC compositions of Lake Malombe had limited fisher representation. However, considering the role village headmen play in their communities, they needed to be kept in the background of the BVC activities. They should not be given more responsibilities beyond an advisory role, whereas the BVCs should have the autonomy to function as a fisher representative body, and should be on the same level as all other village committees. They should not be treated as special village committees as has been the case so far.

Co-management studies in Malawi have concluded that the BVCs around one water body, say Malombe or Chiuta, should have one set of guiding principles, such as a constitution initially developed by the BVC themselves, then finalized with the assistance of the DoF. The contents of the constitution should help the BVCs draw-up co-management agreements with the DoF, based on the provisions of the Fisheries Management and Conservation Act of 1997 and their knowledge of the fishery. It is also considered appropriate that mechanisms and capacity should be developed to enable the BVCs to hold annual general meetings, with the participation of the DoF, to review the activities of the past year in terms of its achievements, constraints and relevance of rules and regulations in order to plan for the activities of the coming year. During the same meetings, they need to establish a monitoring and evaluation mechanism.

Role of donors in institutional change

While the Chiuta co-management arrangement developed in the absence of any donor involvement, the Malombe co-management arrangement was different. In the inception phase of the Malombe program, an ODA-DFID (Overseas Development Agency-Department for International Development) funded project, called Fisheries Research and Management Support (FRAMS), together with a GTZ-funded (German Technical Cooperation) project, called Malawi - German Fisheries and Aquaculture Development Project (MAGFAD), co-funded the feasibility study of the co-management arrangement. The implementation phase was later jointly funded by four projects, the two projects mentioned above and a UNDP-funded 5th Country Programme and the Fisheries Development Project (FDP). GTZ, DANIDA, IFM (Institute for Fisheries Management and Coastal Community Development) and the WorldFish Center funded a number of studies on Lakes Malombe, Chiuta and Chilwa, as well as conducted capacity building programs within the DoF and among the communities.

All of the four projects had different inputs into the co-management program and their support was routed through the Department of Fisheries. Despite this, the expatriate implementing officers of MAGFAD also got involved with the CLU staff and the BVCs at the village level. The impression that this involvement created among the fishing communities was that it was a MAGFAD show through the DoF. The MAGFAD expatriates were Europeans and the fishing communities always associated the co-management activities in the initial phase with MAGFAD, to the extent that some fishing communities viewed MAGFAD as the owners of the program rather than the DoF. Later, this had a negative effect on the performance of the BVCs when the MAGFAD project phased out. It gave an impression that the donors had their own agendas, which they were pursuing in the course of implementing the programs.

Future direction of fisheries institutions

The introduction of fisheries co-management around the two lakes brought in a number of changes among the fishing communities. Human behavior is a response to particular institutional incentives (Hanna and Jentoft 1996), and the rational choice approach assumes that human behavior is embedded in social relationships that are shaped by cultural and structural forces (Jentoft et al. 1998). The establishment of the BVCs among the fisher communities meant initiating a process of change within the communities, which in the long run may or may not be reversible.

By design in Lake Malombe, and by coincidence in Lake Chiuta, the two management systems in these lakes changed to co-management. In the histories of these two lakes, this kind of management was new and, therefore, the implementation processes were seen to stumble over many obstacles, as the people responsible for the programs had no background knowledge on how to effectively implement the new management systems.

The establishment of the BVCs and effective functioning of these BVCs require collective action from the fishing communities. The results of studies in Malombe, however, have shown that cooperative behavior that leads to collective action among the fishers of Malombe towards fishery activities was missing. Therefore, for the BVCs in Malombe to work, a change was required in fishery institutions, especially in the way the fishing communities view fishing activities, as well as a change in their mental

attitudes towards the fishery. Individual rationality in view of fish market prices was identified as the driving force among the fishing communities towards individualism. It should be noted, however, that a process of change of this nature could take a long time and will call for perseverance among the implementers.

Current experiences in Malawi have issues that affect the implementation and legal empowerment of the LFMAs. For example, how are timeframes defined in the contractual agreements between the DoF and the LMFAs, considering that co-management takes a long time to be fully implemented? The situation is further complicated when issues of decentralization are brought on board as powers are devolved to District Assemblies, and the question arises as to whether the DoF or the District Assemblies signs the management agreement with the LFMAs. To date, management agreement templates have been developed, but no agreements have been signed yet. Discussions are still taking place between the DoF and local governments on how issues of decentralization affect the co-management program and how best they can be handled.

Sustainability of the co-management intervention in Malawi was found to depend on three major factors (Donda 2001). These are:

1. The DoF's understanding of the socio-economic and cultural factors of fishing communities: These factors are important because the DoF will be able to assess the potentials and constraints of fishing communities that will enable them to actively participate in co-management. In addition to this, the knowledge of local institutions and how they affect the peoples' behavior will greatly help DoF to plan effectively how to approach and involve the fishing communities in co-management. Finally, it will enable the DoF to assess the dependence of the fishing communities on the fishery, and whether within the communities there is a tendency towards collective action or not, considering that collective action among resource users is an important aspect that provides social capital in community development activities.
2. The institutionalization by the DoF of appropriate property rights over the lake and the fish resources: These will provide the rights of exclusion, which in the long run will help reduce fishing effort and at the same time instill a sense of ownership over the resources.

3. Capacity building for both the DoF and the communities: Capacity building among the fishing communities includes legal empowerment, financial empowerment and training of people to understand co-management concepts.

Addressing these three factors will help build confidence and, to some extent, act as incentives for them to actively participate in co-management. On the DoF side, capacity building should be viewed in terms of training the staff involved in co-management concepts, as well as the DoF's ability to change its attitude and adapt to the requirements of co-management.

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4 Governance and Institutional Changes in Fisheries in Bangladesh

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Introduction

The fisheries sector is one of the thrusts in the national economy of Bangladesh. It contributes to food security, employment generation and promotes national economic development through foreign exchange earnings. The value addition of this sector is considered to be 100% with substantial forward and backward linkages. The country's vast wetlands constitute 33% of the total land area, covering about 4.5 million ha, and provide a unique resource for hosting a huge range of aquatic flora and fauna. Besides the inland water resources that offer opportunities for both capture and culture fisheries, the exclusive economic zone (EEZ) of the Bay of Bengal covers an area of 0.166 million square km, and is considered one of the richest ecosystems in the world in terms of fish stocks and species diversity.

Different management approaches involving both the public and private sectors have been implemented since 1972. From 1990 onwards, the fisheries sector attracted private sector participation in both development and management leading to increase in investments.

The management regime and governance system for developing various fishery systems has been owned and controlled by a number of government agencies, but the lead role is undertaken by the Department of Fisheries under the administrative control of the Ministry of Fisheries and Livestock (MoFL). The total husbandry of the country's fisheries resources and the generation of employment opportunities are mainly shouldered by the Department of Fisheries in order to reduce the poverty level. However, the major activities also depend upon the management regime of other sectors, such as the Ministry of Land (MoL) for revenue collection from the waterbodies, and the Ministry of Water Resources for facilitating irrigation and drainage improvement projects. As a consequence, the involvement of different agencies for managing the country's water resources can cause duplication of efforts and/or overlapping of activities.

Economic profile of fisheries

Despite fluctuations in supply and demand of fisheries commodities caused by the changing economic situation, anthropological interference and environmental degradation through natural processes, the animal protein demand of about 63% of the population is met by fish as a prime and important source of protein. According to 2002-2003 fish production statistics (DoF 2003), the sector contributes about 5% to the gross domestic product (GDP), which is about 20% of the value of agricultural production. As an economic activity, the fisheries sector directly supports an estimated 1.2 million people. In addition, there are about 12 million people whose livelihoods depend indirectly on fisheries as subsistence fishers, part-time fishing laborers, aquaculture operators, fisheries traders and business people. Fish and fisheries products contributed about 5% to the country's total export earnings in 2002-2003, and are considered an important item in the list of export commodities. The annual growth rate since 1991 ranges between 6 and 8% and the sector needs comprehensive and concerted efforts to harness its maximum potential.

Aquatic ecosystems and their production potential

Bangladesh's aquatic ecosystem possesses a very unique configuration with a great diversity of fisheries resources from capture, culture and culture-based management of semi-closed or open waterbodies. The country has altogether 230 rivers, 54 of which are shared with upper riparian countries and thus have extensive floods, especially during the monsoon season (Ali 1999). Inland open water habitats are rivers including estuaries, canals, floodplains and *beels* (deep depressions). They become components of a single integrated production system during the monsoon season, providing suitable ecosystems for the regeneration of capture fisheries.

Owing to habitat degradation and man-made interference, the open-water productivity is in decline. Improved aquaculture practices in closed and semi-closed waterbodies including ponds, *baors* (oxbow lakes), reservoirs, minor floodplains and other means of intensification such as rice and fish/shrimp farming, culture-based production in floodplain ecosystems and pen aquaculture have all contributed to fish production. If the country's huge open water resources are developed and managed in an integrated way, then substantial production can be achieved. On the basis of topography and

nature of habitat, the country's fisheries are grouped into four categories, namely: inland capture, culture, brackish water and marine. Both the public and private sectors contribute to the management and development of fishery resources.

The open-water capture fisheries resources, including inland and marine waters, are considered public property and are administratively controlled by different government agencies. After 1990, the management of a few selected inland open waterbodies was transferred to the Department of Fisheries (DoF) for interventions in the community-based fisheries management approach involving genuine fishers living on or around those waterbodies for a stipulated period. However, the property right remains with the administrative agency. This type of governance promotes the sustainable management of open-water fisheries through the establishment of community organizations. The revenue-oriented management system needs to be improved through the scientific management approach in order to improve the environment and reduce poverty of the people depending on the living aquatic resources for their sustenance.

The legal framework for managing fisheries resources

As mentioned above, the country's capture fisheries resources are publicly owned, and contribute a significant livelihood support to poor fisher communities whose income depends mainly on fishery. Non-compliance to the Protection and Conservation of Fish Act, 1950 and other codes of practice, and the continued exploitation from the common pool resource eventually leads to the well-known "tragedy of the commons" suggested by Hardin (1968). For sustainable use of fisheries resources, the Government of Bangladesh enacted relevant acts, ordinances and rules from time to time. The important legislative instruments include:

1. The Protection and Conservation of Fish Act, 1950 (amended in 1995)
2. The Tank Improvement Act, 1939 (amended in 1986)
3. The Bangladesh (then East Pakistan) Fisheries Development Corporation Ordinance, 1964
4. The Fish and Fish Product (Inspection and Quality Control) Ordinance, 1983 and Marine Fisheries Rules, 1983
5. The Fisheries Research Institute Ordinance, 1984. Under clause 2(1) of the Protection and Conservation of Fish (Amendment) Act 2002, the

import, production, marketing and use of all types of monofilament fishing nets (current Jal) are completely banned. The illegal use of such nets is subject to imprisonment and penalty of fines.

During 2002-2003, the DoF, with assistance from the public administration and Naval force, seized and destroyed illegal nets worth *Taka* 60 million. Moreover, mobile courts were administered and cases filed against violators. Considering the importance of the *hilsa* fishery in the national economy of Bangladesh, the Government extended the period from November-April to November-May for a complete ban on catching *hilsa* juveniles. The legislative measures and enforcement mechanisms are entirely regulated within the jurisdiction of public sector agencies.

In marine waters, fishing operations conducted by industrial trawlers in waters deeper than 40 m are regulated to some extent by the Marine Wing of the DoF. However, the mechanized commercial boats and traditional motorized boats are difficult to control because of their large number and extensive areas of operation. In reality, these boats do not comply with existing rules and are practically not under any fishing management. Moreover, all seagoing fishing vessels are required to obtain a certificate of registration from the Mercantile Marine Office under the provisions of the Bangladesh Merchant Shipping Ordinance, 1983, for the lawful navigation of crafts or vessels engaged in marine and coastal fishing activities. But the issuance of fishing licenses should be the mandate of the Marine Wing of the DoF. According to Section 13 of the Marine Fisheries Ordinance (MFO), such a license shall be valid only with respect to the species of fish and the type of fishing gear or method of fishing, or the location specified in the license. The DoF's Marine Wing, through its coastal area-based establishments, is authorized to issue fishing licenses according to the relevant section of the MFO, 1983. The dual management in regulating the fishing vessels and fishing activities by different agencies makes it difficult to restrict illegal fishing operations.

The existing Marine Fisheries Ordinance of Bangladesh has reserved the operation of artisanal fisheries to waters up to the depth of 40 m, which is often violated by industrial trawlers. The provisions of the existing Fisheries Act and Regulations are poorly known in fishing communities, thus compliance is very poor. The Government also does not have a sufficient number of enforcement personnel to execute the rules. On San Salvador Island in the Philippines, enforcement and compliance to the rules was

achieved through the shared participation of fishers in guarding marine sanctuaries (Katon et al. 1997). Participatory monitoring and enforcement mechanisms should be in place in Bangladesh for the protection and conservation of capture fishery resources by establishing community organizations. This will contribute to building trust among various partners involved in managing the resources. In addition, the process also reduces the Government's revenue expenditures.

Institutional arrangements in fisheries resources management

With the exception of closed fisheries, especially household ponds and lakes, the majority of the capture fisheries occur within public properties and are administratively controlled by a number of government agencies, that include: the MoL; the MoFL; the Ministry of Water Resources, the Ministry of Youth; the DoF; the Bangladesh Fisheries Research Institute (BFRI) and others. These agencies are mainly concerned with the planning, research, development, management and regulation of the fisheries sector. However, during the last two decades or more, there has been an increase in private sector involvement in the fisheries sector.

Currently, pond/shrimp aquaculture, export of fisheries commodities, commercial harvesting of marine fish, processing, marketing and trade are mostly controlled by the private sector. The public inland fisheries resources of Bangladesh have been managed under different arrangements over the last two centuries or more. The "feudal lords" system (Hossain et al. 1998) promulgated by the British Government in 1793 was abolished by the enactment of the East Bengal State Acquisition and Tenancy Act in 1950. With the abolition of feudal system, fisheries became the Government's property under the administrative control of the MoL, which currently has authority and proprietary rights over state-owned waterbodies (Capistrano et al. 1997).

After the emergence of Bangladesh as an independent nation, the Government took several initiatives to improve the management of open water fisheries resources, including the following (Ahmed et al. 1997):

- restricted leasing of waterbodies to registered fishing cooperatives (1973);
- direct negotiation of leasing with organizations and individuals that would invest in the waterbodies to enhance or conserve the resources (1980);

- transfer of leasing and revenue collection authority to the MoFL and the DoF (1980); and
- transfer of the leasing and revenue collection authority for smaller waterbodies (1-8 ha) to *upazila*[1] (1984).

However, none of the management mechanisms could generate a strong institutional base for the sustainable management of open-water aquatic resources or involved the beneficiaries. In 1986, upon a recommendation from the Land Reform Committee, the Government introduced the New Fisheries Management Policy (NFPM), a new approach shifting from maximizing revenue to maximizing the welfare of genuine and poor fishers. Under this approach, registered fishers were provided licenses with stipulated fees according to the gear type, issued directly by the DoF technical personnel working in *upazila* and districts. However, in 1995, the licensing system for the use of open waters such as rivers and canals was abolished, providing opportunities for open access by fishers without paying any fees. The declaration reduced the number of *Jalmohals*[2] from the total of 330 under the NFMP system.

In early 1990s, the Government of Bangladesh implemented a number of technical assistance projects to find appropriate mechanisms to involve genuine fishers in the management process of public waterbodies by establishing an institutional base. In 2001, the use rights of 429 inland public waterbodies were transferred to the DoF to implement the community-based fisheries management approach under seven development projects through a Memorandum of Understanding between the MoFL and MOL (Islam 2003). In most of the projects, no appropriate exit strategy was planned, thus activities were not sustained after phasing out, and again needed external support. The sustainable management of resources would be hardly possible without an institutional entity to undertake local capacity building for human and social capital and the performance of fishers.

The lead institutions involved in the development and management of the fisheries sector with their specific mandates and responsibilities are enumerated and discussed below.

[1] Political administrative unit at a sub-district level.

[2] Physically defined state-owned waterbodies for which the fishing rights are auctioned out by the government of Bangladesh.

The Ministry of Fisheries and Livestock (MoFL)

The MoFL was created in 1985 when the Fisheries Division and Livestock Division were separated from the Ministry of Agriculture. The responsibilities of the MoFL include the formulation and coordination of national policies in developing fisheries and the control, management and development of public fisheries resources through its line agencies. The Ministry is primarily a policy-making agency. It implements and executes the related policies, strategies and legislation through the DoF, BFRI, the Bangladesh Fisheries Development Cooperation (BFDC) and coordinates with the MoL, Coast Guard, Bangladesh Navy and other concerned ministries, agencies and development partners to utilize the maximum potential of the fisheries sector.

The Department of Fisheries (DoF)

The DoF is within the administrative control of the MoFL and is the lead agency responsible for the development and management of the fisheries sector. The DoF is primarily responsible for the implementation of fishery programs and projects including training and extension services, advisory services and institutional credit, transfer of appropriate technologies to farmers and entrepreneurs, enforcement of relevant legal instruments to protect and conserve fisheries resources for sustainable use, ensuring the quality of exportable fisheries products by maintaining the Hazard Analysis and Critical Control Point (HACCP) system, and assisting in policy formulation and strategic planning of the Government. The department is currently carrying out a number of development projects for socioeconomic development of fisher communities. It also liaises with fisheries-related regional and international organizations, and coordinates investments in various sectors of the fisheries industry, such as trawling, fish processing and others. The DoF is providing services to local communities by setting up extension agencies at the *upazila* level to reduce the poverty situation of fish farmers and fishers.

The department is currently in the process of developing a number of strategies for the sustainable management of fisheries resources under the direction of the policy statements in the National Fisheries Policy, 1998. It has infrastructure facilities including seven fish-training centers, 112 fish hatchery-cum-demonstration units, and 21 shrimp landing and service

centers. The department has its central office in Dhaka with field offices at each district and *upazila* level to execute government policies and strategies through its technical personnel. Under the Aquaculture Extension Strategy, provisions have been made to develop local extension agents for fisheries (LEAF) who provide extension services at the union level according to local resources and needs. They deliver services in managing resources at local level under the instruction and guidance of the DoF.

The shrimp sub-sector is driven by the private sector. The interests of the respective groups associated with this sector are being promoted by organized fora, such as the Exporters Association, the Shrimp Farm Owners Association, the Processors Association and the Hatchery Owners Association. Moreover, there is a wide range of community-managed organizations (CMOs) operating at the grassroots level that include landless groups, women's groups, farmers' cooperatives, fishers' cooperatives, and resource management organizations. Shrimp resource committees at the divisional, district and *upazila* levels are engaged in the management of shrimp resources through the National Committee, as envisaged in the Shrimp Mohal Management Policy (1992).

The Bangladesh Fisheries Research Institute (BFRI)

The BFRI was established in 1984 through the promulgation of the Fisheries Research Institute Ordinance, 1984 (Ordinance No. XLV of 1984). The concept of establishing the BFRI was first highlighted in the National Seminar on Fisheries Research, organized by the Bangladesh Agricultural Research Council (BARC) in September 1982. The mandate of this national institute is to develop appropriate technologies for the sustainable use of fisheries resources and conduct research on emerging issues in fisheries development. Since its inception, the BFRI is conducting research on fisheries development and disseminating technology packages through the DoF, with the involvement of NGOs. A better linkage between the BFRI and the DoF should be considered as a means to increase the effectiveness and coordination of research, the findings and their timely dissemination to the management level. The principal mandate of the BFRI is to carry out and conduct fisheries research focusing on national needs and priorities, maintaining close linkages with other agencies such as the DoF, BFDC, and relevant ministries.

The Bangladesh Fisheries Development Corporation (BFDC)

The BFDC was established in 1964 to promote the commercial harvesting of marine fisheries resources from the Bay of Bengal. After independence, the BFDC obtained its permanent legislative structure under the BFDC Act of 1973 and is entrusted with the development of fisheries and fishing industries in Bangladesh. It introduced the concept of motorization of traditional fishing crafts in 1966-67 through an FAO/SIDA project and took measures to provide outboard engine boats of 6HP and 12HP to poor fishers on a hire-purchase basis. Moreover, the BFDC pioneered the introduction of modern trawlers in deep-sea fishing by procuring 10 trawlers from the then Soviet Union in 1972.

The introduction of inboard marine diesel engines, industrial trawlers and the replacement of cotton nets by nylon attracted the private sector to invest in coastal and deep-sea fishing. As a result, 105 trawlers and 43 000 fishing boats, both mechanized and non-mechanized, were engaged in commercial and artisanal fisheries by the private sector. The BFDC is considered a major contributor to the development, modernization and industrialization of coastal and marine fisheries. It also has the responsibility for building fisher folks' institutions by establishing fishers' cooperative societies. Today, however, the activities of this agency are reduced due to greater participation and investment by the private sector. The Government is encouraging and facilitating more private sector investment in developing and managing fisheries resources through incentives like tax liberalization and technological services.

Past and current performance of the fisheries sector

Production performance/target achievements in different plans

After independence, the First Five-Year Plan of 1973-78 stipulated an estimated fish production target of 10.2 lakh mt (metric tonne), or 1.2 million mt, (1 lakh=100 000). But at the end of the plan, the actual production achieved was 643 000 mt, which was only 63% of the target fixed. During this period *Taka* 48.5 *crore*, or 485 million *Taka* was allocated to implement development projects for enhanced fisheries production and resource management, but due to weak organizational and institutional structures and the lack of required capacity by the department, only 190 million *Taka* (39%) was spent. The inadequate planning method and insufficient

budgetary allocation for harvesting the potential of this sector deter the pace of this sector even though fisheries play a very vital role in the national economy of Bangladesh. Other impediments to achieve the targets were lack of infrastructure facilitates, weak planning and implementation, poor investment by the private sector, and limited public sector investment.

On the basis of the achievement in the First-Five Year Plan, the two-year subsidiary plan (1979-80) was taken with a production target of 808 000 mt and with 440 million *Taka* allocated to achieve the target. At the end of the plan period, 386 million *Taka* was spent and 78.7% of the target was achieved. The associated problems identified were lack of modern technology packages for dissemination to farmers, insufficient extension services delivery by public sector, erection of flood control and irrigation projects without mitigation measures for fisheries production, and weak organizational capacity.

The technical shortcomings, geographical distribution and type of resources, seasonal variability, and target groups were not appropriately considered in the development programs/projects. As a result, the activities were not sustained after phasing out the projects.

The Second Five-Year Plan (1980-85) fixed a production target of 1 million mt, with the government allocation of 1 743 million *Taka*. It was expected that an additional 4 000 million *Taka* would be invested by the private sector. During this period, 1 583 million *Taka* (98%) was spent with an achieved production of 774 000 mt.

The Third Five-Year Plan (1985-90) and Fourth Five-Year Plan (1991-95) targeted a production of 1 million and 1.2 million mt, respectively, with a financial allocation from public sources amounting to 3 500 million and 7 490 million, respectively.

Achievements of the Fifth Five-Year Plan

Poverty alleviation was the core objective of the Fifth Five-Year Plan (1997-2002) when increased public expenditures were allocated to infrastructure and social sector programs targeted to the poor (Table 1). The DoF implemented between 21 and 27 development projects during this period for enhanced fisheries production and resources management, in addition to

its normal, regular responsibilities. The activities executed in the projects included the following:

- human resources development
- extension and dissemination of technology packages
- demonstrations
- credit delivery
- infrastructure development
- institutional capacity building
- execution of legislative and legal measures
- aquatic resources management and improvement of the environment
- restoration of fish habitats
- establishment of sanctuaries and improvement of biodiversity
- provision and improvement of logistic and support services

During this period, the human resources development components were implemented in all the projects irrespective of funding sources. Training and extension services were provided to a diverse range of beneficiaries including government officials from different coordinating agencies, fish farmers, fishers, entrepreneurs, traders and processors to build capacity. Moreover, a few projects were implemented to initiate institutional reforms under the community-based fisheries management paradigm. The process is still continuing within the project domain.

The Fifth Five-year Plan targeted a production of 2.075 million mt of fish in the terminal year 2001-2002. Considering the per capita daily fish consumption of about 27 g in the base year (1997-98), the target was fixed at 34.43 g/person/day in the year 2001-2002, based on an estimated population projection of 132.5 million.

During the period 2002-2003, the per capita fish intake increased to about 14 kg that translates into about 39 g/person/day, but short of the required amount of 18 kg/person/year (DoF 2003). During this period, the DoF, BFRI, BFDC under the administrative control of MoFL and private sector investors, including the fish farmers, undertook various comprehensive efforts to increase the productivity of various fisheries resources, namely open water capture fisheries, closed water culture fisheries, brackish water aquaculture and exploitation of marine resources. The involvement of non-governmental organizations (NGOs) in fisheries-related activities profoundly contributed and strengthened the development and management of the

fisheries sector in the preceding years. In this plan's period, the government allocation was fixed at 5 861.8 million *Taka*. It was calculated that about 82% of the allocation was spent and the fish production also increased to 1.87 million mt, an achievement of 91% of the target. A substantial increase in productivity was achieved from each type of waterbody.

Table 1. The Annual Development Plan (ADP) allocation and expenditure in the fisheries sub-sector (DoF 1997-2002).

Year	ADP Allocation (Lakh *Taka*)			Expenditure (Lakh *Taka*)		
	Taka	Project Aid	Total	*Taka*	Project Aid	Total
1997-1998	2 341.25	3 370.00	5 711.25	2 165.06	3 013.53	5 178.59
1998-1999	2 429.10	6 185.27	8 614.37	2 343.79	6 124.38	8 468.17
1999-2000	3 297.02	5 659.27	8 956.29	3 132.23	4 777.12	7 909.35
2000-2001	4 537.50	7 390.00	1 1927.50	3 065.81	6 992.25	10 058.06
2001-2002	6 634.00	7 053.00	3 687.00	6 002.65	6 777.19	12 779.84

Source: DoF 2003.

Economic performance and export profile

Each year Bangladesh earns a considerable amount of foreign exchange revenue by exporting frozen shrimp and other fisheries products. Currently, fisheries products dominate the list of exportable commodities whose contributions to the country's total export earnings range from 5 to 6%. Frozen shrimp and other fisheries products in various forms are being exported to the United Kingdom, USA, Japan, France, Hong Kong, Singapore, Saudi Arabia, Sudan and other developed countries. About 97% of the total fish produced in the country is used for domestic consumption and about 2-3% is processed for export to the international market. During the period 2002-2003, Bangladesh exported the highest ever volume of frozen shrimp and fisheries products amounting to 47 000 mt (Bangladesh Export Promotion Bureau 2003). However, the value of the total exports declined due to a fall in the unit price of fisheries commodities in the international market because of the September 11, 2001 incident.

Recently, Bangladesh is complying with the HACCP procedure at each level of the production and processing cycle to ensure that product quality meets international standards. To get certification from a legal authority, most processing plants in the country are now equipped with modern facilities to establish their own checking system. The European Union authority is very strict about quality assurance and compliance with various sanitary and phyto-sanitary measures during the processing of exportable

fisheries products. To meet international standards of exportable fisheries commodities, a modern laboratory has been established at the DoF to perform tests on antibiotic and pesticide residues. The department is providing necessary support through training, extension, advisory services to farmers, and processing plants to maintain the quality of processed fish products. Formal institutional credit facilities from Nationalized Commercial Banks (NCBs) were provided to fish processing industries to upgrade their plants to an international level.

Table 2. Trend in export of frozen shrimp and other fisheries products from Bangladesh (quantity in mt and value in million *Taka*)

Year	Frozen shrimp		Frozen fish and fisheries items		Contribution of shrimp total export (%)	Total export of shrimp and fish		Percent of country's total export earnings (%)
	Quantity	Value	Quantity	Value		Quantity	Value	
1997-1998	18 630	11 815	11 528	2 063	85.13	30 158	13 878	5.83
1998-1999	20 127	11 622	8 404	2 172	84.26	28 531	13 794	5.41
1999-2000	28 514	16 122	10 877	1 994	88.99	39 391	18 116	6.28
2000-2001	29 713	18 852	9 275	1 476	92.74	38 988	20 328	5.77
2001-2002	30 209	14 478	11 273	1 894	88.43	41 482	16 371	4.76
2002-2003	36 864	17 200	10 507	2 216	88.59	47 371	19 416	5.10

Source: DoF 2003

The identifiable paradigm shifts in fisheries

During the last two decades, the open water capture fisheries showed a decline in growth due to environmental changes and increased human activities. To increase productivity from both inland capture and culture sub-sectors, and coastal and marine sub-sectors, a number of initiatives are being implemented, as outlined and discussed in the following sections:

Inland Open Water Capture Fisheries

- Stocking of fish fingerlings in selected floodplains and semi-closed and Flood Control, Drainage and Irrigation (FCDI) project areas through community involvement. This is an alternative arrangement executed by the DoF that should not be a regular system to enhance production. Coordinated efforts will be undertaken involving other agencies to increase the productivity of open waters through protection and conservation measures.
- Management of the floodplain ecosystem for harvesting rainwater

through culture-based fish production in some regions involving local people residing in or around the floodplain.

- Modest efforts are undertaken through the DoF for the restoration of fish habitats in selected water bodies to facilitate the unhindered spreading of fish and improve biodiversity. Comprehensive and coordinated efforts should be taken involving other agencies such as the Bangladesh Water Development Board (BWDB), the Local Government Engineering Department (LGRD), Roads and Highways (R&H), Bangladesh railways and others to restore fish habitats and improve the environment.
- Establishment of sanctuaries to facilitate the development of brood stocks, as well as to improve biodiversity.
- Promulgation of legislation by government administrative orders for the protection and conservation of resources, especially banning the catch of juvenile *hilsha* (*Jatka*) and shrimp larvae through a rehabilitation program with involvement of genuine fishers.
- Initiatives are taken to divert fishers to occupations other than fishing through motivation, training and credit support within projects. This provision needs to be sustained through the implementation of program-based activities.
- Awareness building among fishers on community-based participatory fisheries management in open waters is already initiated within project provision.
- NGOs are involved as external agents to provide support and establish community capacity to undertake fisheries management activities. NGOs should work under common guidelines within an agreed-upon principle and action plan developed for achieving sectoral objectives.

Culture fisheries

The growth rate in the fisheries sector during the last two decades averaged between 6 and 8%, which has not kept up with the increasing growth in the population. The Government of Bangladesh took various pragmatic initiatives to increase the production of fish from closed water bodies. As a result, in the past 10 years, the growth from aquaculture increased between 10 and 20%. The growth from culture fisheries has been achieved from both horizontal and vertical expansion of this sector. The horizontal expansion includes bringing in the derelict ponds and water bodies, the FCDI water bodies, paddy-cum-fish culture, and pen aquaculture under improved aquaculture practices. On the other hand, the vertical expansion occurred in the intensification of certain species of fish and shrimp of commercial

importance, such as coastal shrimp *(Pungacius*) and Genetically Improved Farmed Tilapia (GIFT). Moreover, the establishment of carp and shrimp hatcheries for ensuring a supply of quality seeds contributed to enhanced production. According to 2002-2003 fish production statistics, aquaculture contributed about 7.52 lakh mt, which accounted for about 38% of the total fish production in the country. To achieve this growth, the Government implemented a number of approaches, which include:

- Provision of appropriate training and extension services on improved technology packages on fisheries at the field level.
- Promotion of the supply of quality fish seed to farmers.
- Provision of advisory services and necessary technical guidance to private hatchery owners to reduce and overcome the problem of inbreeding and intentional hybridization.
- Facilitation of cooperation and enhance coordination among different agencies working at the local government level and ensure the participation of various stakeholders for increased productivity.
- Increasing women's participation in aquaculture, post-harvest technology and fish processing activities to generate income.
- Dissemination of information to the private sector in various fora through their associations and clubs to share common interests.
- Implementation of a good number of projects to increase and sustain production considering environmental goodness.
- Promotion of access to formal financial institutions for credit delivery without collateral. The department has also initiated a program for credit delivery without collateral under its poverty alleviation projects.
- Involvement of the Government, private entrepreneurs, NGOs and external development agencies in supporting aquaculture growth.
- Involvement of destitute peoples and fishers in managing aquaculture activities in governmental water bodies to facilitate an equitable distribution of benefits.

Shrimp and brackish water aquaculture

In recent years, shrimp farming emerged as one of the significant sectors for earning foreign exchange. The rapid expansion of shrimp farms in the coastal districts of Bangladesh mostly ignored the infrastructure and technical aspects, leading ultimately to lower productivity. Shrimp production has increased from less than 100 kg/ha to more than 300 kg/ha,

which is low compared to other countries in the region. During 2002-2003 more than 88% of the country's export earnings from the fisheries sector was contributed by shrimp alone. Demand from the international market led the government to undertake a few measures to develop this sector, including:

- Promotion of environment-friendly culture practices without destruction of mangrove forests.
- Ban on the collection of post-larvae from coastal waters to improve shrimp recruitment and biodiversity. However, the execution of this executive order is not properly implemented because the livelihood security of the poor depends on these resources.
- Provision of training and extension services on shrimp farm management to farmers to overcome the prevalence of viral diseases.
- Arrangement of training on post-harvest technology and marketing system maintaining HACCP procedures to shrimp farmers and others associated in the market chain.
- Encouragement of the private sector to establish shrimp and prawn hatcheries to cater to the increased demand for shrimp post-larvae. By 2003, 44 shrimp and 28 prawn hatcheries were established by the private sector, against only one shrimp and five prawn hatcheries in the public sector.
- Implementation of development projects for both freshwater and marine shrimp in order to disseminate improved management techniques.

Marine fisheries

Despite the decline in the catch per unit effort (CPUE), the share of marine fisheries in the total national landings rose from 10.6% in 1970 to about 22% in 2002-2003. Inadequate information and lack of an up-to-date database on fish stock, their abundance and distribution, biology and behavior hinders the assessment of the maximum sustainable yield (MSY) and exploitable level for different species of fish. Moreover, a substantial post-harvest loss of marine catch as trash fish from shrimp trawling has been considered a reduction in the total catch and an economic loss to the nation. The acts, rules and ordinances for managing marine fisheries are not properly implemented due to insufficient manpower and necessary logistics for the DoF. Moreover, the legal jurisdiction on managing and controlling the activities of fishing vessels are shared by a number of agencies, but there are gaps because of weak coordination mechanisms. To implement improved

conservation and management of marine fisheries resources, the following immediate actions should be undertaken:

- Conduct of a detailed survey and assessment of stocks for pelagic, demersal and other marine resources.
- Monitoring, control and surveillance (MCS) system would be in place to protect and limit the number of fishing vessels, thereby facilitating production at a sustainable level and enhancing the stock.
- Establishment of marine parks and marine protected areas (MPAs) should involve local stakeholders in the management process.
- Interdepartmental coordination in monitoring, control, and surveillance (MCS) starting from boat licensing to surveillance in inshore and offshore waters should be in place. Trawlers frequently violated the legislative bindings due to weak monitoring and surveillance mechanism of the DoF and other agencies involved in supervision.
- Enforcement of legal and regulatory instruments through a community-based approach should be implemented to reduce the burden on government machinery to enforce legislative instruments.
- Control of effort and mesh size for operation in selected areas and seasons based on population dynamics.

The role of donors and NGOs in institutional change

Donors and technical agencies act as catalysts in building and expediting institutional changes to improve the overall process of the fisheries management system. They are often considered as development partners assisting in institutional strengthening to achieve sectoral goals by providing funds, technical assistance and other logistics. From 1972 to 2002, a total of 105 development projects were implemented with assistance from donors and the Government of Bangladesh (GOB) for managing and developing the fisheries sector (Mazid 2002). Since independence, almost 70% of the financing for development projects in fisheries have been contributed by donors (Mazid 2002). Few of the projects had components for supporting institutional reforms through the restructuring of the DoF mandate and establishing infrastructure and support services. Recently, donors are encouraging the involvement of national and international NGOs, research and educational institutions, such as universities, foreign donor agencies, community-based organizations, and local charismatic leaders, to enhance sectoral activities. In recent years, universities have gradually become more involved in the field of fisheries research. Donors are also facilitating

finance towards more action research involving the relevant universities and research institutions to perform research on institutional reforms for managing resources.
Currently, under some of the development projects being implemented by the DoF, a good number of NGOs are supporting the following activities:

- Building rapport with the fisher communities
- Conducting of biophysical characterization of the fishing community and resource systems through PRA exercises
- Developing consensual plans through workshops, with the participation of communities towards restoration, conservation and protection of the resources
- Organizing fishers into fisheries management organizations (FMOs)
- Building and strengthening community-based institutions for the sustainable management of resources

For instance, under the UNDP/FAO supported project "Empowerment of Coastal Fishing Community for Livelihood Security", 13 NGOs are participating as external agents to provide support for community capacity building to undertake coastal resource management activities through community-based approaches. Similar attempts are being implemented through the "Community Based Fisheries Management Project (Phase II)" for managing inland open water fisheries resources funded by the WorldFish Center and Department for International Development (DFID). In the Fourth Fisheries Project, community-based stocking in selected flood plains is being implemented involving NGOs as partners, also under the technical guidance of expatriates supported by donors.

Since 1985, the Community Development Centre (CODEC), a community development NGO, has been providing assistance for social, political and economic development and poverty reduction in poor fishing communities of riverine and coastal Bangladesh. NGOs are mainly involved in organizing target people in groups; providing awareness and leadership training, skills training and literacy campaigns; information dissemination on health care and sanitation, and disbursing credit for investing in suitable income-generating activities (IGAs). NGO activities should be streamlined through the DoF/MoFL, and should not work in isolation. Recommendations made under the "Fisheries Sector Review" by the World Bank and DFID should be in place through the formation of "The National Fisheries Management Council".

One disadvantage of engaging external agents like the NGOs is that it may not be seen as an effective instrument to impart institutional changes. Moreover, the involvement of NGOs is evident only during the implementation phase, especially in donor-funded projects. As a result, after phasing out of the project, the support provided by the NGOs is not sustained, and the process of institutionalization involving the target communities is discontinued. Thus, NGOs and other CBOs involved at the operational level should be mainstreamed according to a holistic and partnership arrangement in order to provide support in sustaining community organizations. In the Philippines, the Local Government Code of 1991 gives a legal mandate to NGOs to participate in the local development council, and under the Fisheries Code of 1998, to participate in the local resources management council (Berkes et al. 2001). Government policy statement should be a prerequisite to support NGOs in building people's organization for managing and developing natural resources.

Future strategies for strengthening institutional approaches

The existing government strategy for developing and managing fisheries resources overly relies on project-based approaches rather than pursuing any program-based activities. The projects are primarily designed and implemented to achieve short-term goals undermining future consequences. Moreover, during the project implementation, the emphasis is not always given to engage the beneficiaries in the process, which deters in building people's institutions for resources management. As a result, the efforts made are not sustained after the projects phase out. At the same time, the majority of the projects often bypass and undermine investing in institution-building. This has hampered the efficiency of implementing agencies, leading to failure in achieving expected outputs from the implementation of the development initiatives (Mazid 2002). Moreover, in most of the projects, no appropriate exit strategy is planned; thus after phasing out, activities are not sustained and again need external support.

Future strategies for enhancing institutional capacity should consider the following:

Capacity-building

- Strengthen human and social capacity at the operational level

Participation of local communities and community-based organizations

- Facilitating transparency in fisheries sector decision-making at all levels through greater stakeholder participation the national and local levels
- Reduction of transaction costs through the formation of people's organizations. Transaction costs are an inevitable part of resources management; their magnitude and influence have implications for community-based resource management (Kuperan et al. 1998). Though a centralized approach is often associated with low program design costs, it suffers from high implementation, monitoring and enforcement costs as the management regime has little legitimacy with user groups (Hanna 1995).
- Encouraging community-based resources management approaches through establishing community organizations for sustainable resource management
- Enabling empowerment of community organizations that are the primary instruments in building and sustaining the process
- Using indigenous knowledge in responding to political and administrative devolution to mitigate emerging issues
- Active participation of local communities in specific projects and performing a supporting role in activities of government agencies or NGOs. However, it is less feasible to pursue active participation models where centralized government systems are the norm, and thus some kind of hybrid becomes necessary.

Role of NGOs, the private sector and networking

- Involvement of local NGOs on a long-term basis under the purview of project/program to contribute to institution building in support of fisheries sector institutions, especially the DoF.
- Promotion of networking/association of different fishing systems in advocacy and lobbying to establish human rights and good governance. This will contribute to the improvement of the socio-economic conditions of fishers and others engaged in fisheries activities. For example, the Community Development Center (CODEC) and the Coastal Fisherfolk Community Network are involved in organizing coastal fisher communities in Bangladesh.
- Assurance of adequate financing for local organizations in the form of capital to meet recurring expenditures through increased access to formal financial institutions and providing micro-credit grants and linking with external agents such as national and international NGOs.

Policy and legislation

- Need for strong political commitment in reforming, building and sustaining institutional structures and good governance.
- Effective conflict resolution by improving governance and through enhanced coordination among different state agencies and resource users.
- More radical and innovative legislation, like the enactment of the Local Government Code of 1991 (LGC) in the Philippines, for managing resources by local government units (LGUs) and their communities.
- Establishment of a fishery coordination committee (Yamamoto 2000) similar to that developed under the 1949 Fishery Law of Japan for managing the inland open water and coastal fisheries resources.
- Integrating GO-NGO-private sector involvement in programs under the executive directive of the DoF to mitigate and reduce the consequences of recurring floods on fisheries resources.
- Provision of Environmental Impact Assessment (EIA) for all development projects particularly those of the Bangladesh Water Development Board (BWDB) to protect and enhance the floodplain fisheries.
- Remedial measures for drainage congestion and increased navigation provision in water sector projects.
- Classification of fisheries ecological zones according to geographical differences to develop appropriate management measures and reduce the risk and damage caused by floods.
- Adequate measures for the rational utilization of water resources for various purposes by several agencies and users.
- Implementation of appropriate action plans for enhancing and sustaining fisheries resources within the purview of the National Fisheries Policy, 1998.

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5 Inland Fisheries Management and Institutional Changes in Fisheries in Cambodia

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Introduction

Cambodia is a tropical country with an area of 181 035 km^2 and an estimated population in 2003 of 13.4 million. The growth rate of about 2.4 % per annum is considered one of the highest in Asia (Nao Thuok and Hav Viseth 2004). The country is almost landlocked and shares boundaries with three countries: Thailand (west and northwest), the Laos PDR (north) and Vietnam (east and southeast). The southwest part of the country is open to the sea (Gulf of Thailand) covering about 300 km of coastline and three provinces. Geographically, the country is divided into four main areas: coastal, mountainous, flat and plateau. The flat plains cover about 1/3 of the total area and lie at the middle from west to east, with the highest population density. The flat plains are the center of economic activities, transportation, and other sectors.

The country is endowed with rich natural resources that have sustained its people for centuries. Cambodia's inland fisheries rely mainly on two ecosystems: the Tonle Sap Great Lake system accounting for 60% of the current annual commercial fisheries production, and the Mekong, Bassac system and their tributaries. The Tonle Sap River and the upper part of the Mekong are very important for the migration of many fish species and provide huge opportunities for the fisheries sector.

However, the rapid increase in population from about 4 million in 1979 to 13.4 million in 2004 is creating pressure on fishery resources. At the same time, the development of other sectors also creates negative impacts on the fisheries sector such as hydroelectric dam construction, the use of fertilizers and pesticides, and the clearing of flooded forests for agriculture.

This paper aims to provide an understanding of the role of inland fisheries, the historic management of inland fisheries, fisheries policy reform and its impact on poverty, and the involvement of non-governmental organizations (NGOs) and donors by reviewing relevant published and unpublished papers and experiences.

Role of inland fisheries

Cambodia relies heavily on its natural resources and agriculture to provide food and livelihoods for its people. Among the renewable natural resources, the inland fisheries sector plays an important role for the national economy, income and employment, food security, gender and eco-tourism.

National economy

The total fish catch from inland fisheries estimated by the Mekong River Commission (MRC) Capture Fisheries Project of the Department of Fisheries ranges from 290 000 to 430 000 tonnes per year with an estimated value at landings of US$150 – US$250 million (Van Zalinge and Nao Thuok 1999). Based on this estimated value, the contribution of the fisheries sector is from 12 to 16% of Cambodia's GDP.

Income and employment

It is difficult to estimate precisely how many people are employed in the fisheries sector, but many researches have shown that fishing provides an important and major source of employment and income for the rural people, who generate their cash and non-cash income from either direct fishing or collecting other products such as firewood (Ahmed et al. 1998).

Food security

The contribution of freshwater fisheries is important for food security and nutrition of the Cambodian people. Rice and fish are the basic diet and more than 75% of the animal protein intake is derived from fish, especially among the rural population. The average fish consumption of people living in fishing-dependent communes, particularly in the Great Lake areas, is about 75.6 kg/person/annum, compared with the national average that ranges from 30 to 40 kg/person/year (Ahmed et al. 1998). These consumption figures indicate that the inland fisheries of Cambodia contribute more to the national food balance than any other inland fisheries in the world.

Besides fish, other aquatic products are harvested from inland waters, flooded forests, wetlands and rice fields for consumption and sale. These include frogs, snails, crabs, snakes, turtles and water birds.

Gender

Women have a higher participation in fishing-related activities than men. These include fish processing, marketing, fishing net maintenance and repair. In addition to fishing- related activities, women also participate in direct fishing activities, especially in fisher families with more women than men (Thay and Schmidt 2004).

Eco-tourism

The Tonle Sap Great Lake with its flooded forests, spectacular flocks of rare water birds (particularly in the core area) and unique floating villages, together with its proximity to Angkor Wat, provides great potential for tourism. The flooded forests are enormously complex and fertile habitats, rich in food and serve as refuges for fish, birds, turtles and a myriad of other species associated with wetlands.

The Tonle Sap Great Lake ecosystem and connected wetlands encompass an enormous amount of species diversity attractive for eco-tourism including rare fish and birds, snakes, turtles, crocodiles and several globally threatened and near-threatened mammal species. If developed with sensitivity to habitats and the cultural identity of its people, eco-tourism can become a significant and sustainable source of foreign currency for the Cambodian economy (Thay and Schmidt 2004).

Institutional involvement in fisheries management

The Royal Government of Cambodia designates the Ministry of Agriculture, Forestry and Fisheries (MAFF) for the management, development and decision-making on resource use in agriculture, forestry and fisheries. The MAFF shares some responsibilities with the Ministry of Environment (MOE) on the management of natural resources.

The MAFF strategy for fisheries development includes the following (TSEMP 2003):

- Fishing lot system reform
- Establishment of community fisheries
- Revision of existing fisheries laws

- Conservation and management of existing fisheries resources
- Production of a fisheries master plan

For the fisheries sector, the MAFF has delegated the roles and responsibilities to the Department of Fisheries (DoF), a technical department that provides technical skills in management, development and day-to-day activities. The key roles and responsibilities of the DoF are to ensure the following:

- harvest with sustainable limits
- supply follows demand
- reduction of the incidence of poverty among vulnerable groups in society

The DoF is responsible for the enforcement of the Fisheries Law that prescribes a framework for management, protection, conservation, utilization and development of fisheries to ensure sustainability of fishery resources for the interest of society, economy and the environment. In addition to the Law, there are a number of sub-decrees and other legal documents such as proclamations, circulations and guidelines governing the fishery sector.

In terms of structure, the DoF has a number of offices and units under its line supervision. Its headquarters in Phnom Penh are headed by a Director and four Deputy-Directors.

At the provincial level, Provincial Fisheries Offices oversee all fisheries activity in the respective province, and are responsible for enforcement of the fisheries law and regulations.

History of fisheries management

Before the Angkor period, fisheries management was simple: there was no fisheries management regulation, small fishing gears were used to catch fish, and the fish catch was shared among the villagers. During the Angkor period, the fisheries sector was better managed and fishing activities were more intensive, with resource users' rights provided to private owners who paid the king as an obligation.

Fishing activities underwent a dynamic change from small scale to commercial scale between 1863 and 1872. However, because of the small population, there was no pressure on the fishery resources and fish was abundant. Regulations were promulgated to identify fishing grounds, fishing gears classified, and taxes imposed on some types of fishing gear.

The fisheries sector became more complex during the beginning of the 20th century with the fishing lot system. A fishing lot map was prepared and some portions of the fishing lot area were set aside for people doing subsistence fishing (Tana 1997).

In 1940, the Royal Government of Cambodia recognized the importance of fish habitat protection. A royal decree on the demarcation of the flooded forest protection boundary around the Great Lake was prepared in order to maintain the flooded forests as fish habitat. Closed fishing seasons, the establishment of fish sanctuaries, and restrictions on certain types of fishing gear were some of the fisheries management measures introduced by the government.

During the Khmer Rouge regime (1975-79), infrastructure and the economic system were disrupted and most of the population was forced into rice production (Degen and Nao Thuok 2000). During that time only a few fishing units existed to harvest and process fish to supply cooperatives and Khmer Rouge cadres. Fishing pressure was reduced and natural fish stock was abundant everywhere.

After the collapse of the Khmer Rouge regime in 1979, the People's Republic of Kampuchea (1979-89) encouraged collective fishing by solidarity groups called "Krom Samaki" by providing fishing rights and inputs such as nets and boats. The government collected a part of the fish production in processed form as an obligation of the solidarity group.

In 1987 a Fisheries Law (Fiat Fisheries Law) was enacted, defining a framework for fisheries management that included temporal and special arrangements of access rights and gear restrictions, and reintroduced a fishing concession, the fishing lot system, as a management tool and as a source of government revenue.

In 1993, a new constitution was promulgated that envisioned the establishment of a liberal democratic state that adopted market economy as

the foundation of Cambodia's economic future. The Department of Fisheries under the Ministry of Agriculture, Forestry and Fisheries has the mandate and regulatory authority to manage, protect, conserve and develop fisheries resources, grant concessions and issue licenses, and collect fees from these activities.

However, in 1998, conflicts over the fishing grounds in the whole country occurred. The main conflict was between large-scale fishing operators (fishing lot owners) and the small-scale fishers (Ly Vuthy et al. 2000).

Fisheries management policy reform

On 24 October 2000, the Prime Minister of the Royal Government of Cambodia initiated a historical change in the fisheries sector by deciding to release a huge area of fishing lots to the local people to organize community fisheries. This is to promote broader local participation in fisheries management and focus on the efficient, sustainable and equitable use of living aquatic resources. The policy reform consisted of several elements as described below.

Release of fishing lot concessions for public use

The fishing lot system in Cambodia created during the French colonial period has now been released for public use. This is a historical event in the fisheries sector and was received enthusiastically by many people, especially those who stay inside and near the lots. As a result of the announcement by the Prime Minister, more than 56% of the total fishing lots were released (536 302 hectares). In terms of number, 76 out of 224 fishing lots were abolished.

Organizational and administrative change

Immediately after the Prime Minister's announcement, a new Director of the Department of Fisheries was appointed on 25 October 2000. Subsequently, on 20 February 2001, staff of the Inspection Units of the DoF and Provincial Fisheries Offices was ordered to temporarily withdraw from the field and remain in the office for training on the new policy of fisheries co-management. On 21 February 2001, the Ministry of Agriculture, Forestry and Fisheries issued a proclamation (Prakas) for the establishment of the Community Fisheries Development Office (CFDO) as a new office

of the Department of Fisheries to facilitate and support the establishment and development of Community Fisheries throughout the country. At the provincial level, the Community Fisheries Development Unit (CFDU) was established in all fisheries provinces as a provincial line unit. The role of CFDU is to facilitate the establishment of community fisheries in the provinces, support the community fisheries (CFs) in developing management plans, and provide ongoing support and facilitation to the CFs.

Legislative and policy changes

The legal document for formalizing the release of fishing lots consists of a series of sub-decrees on the abolition and conversion of portions of private fishing concessions to public fishing areas to allow the local people to establish their community fisheries. In addition, license fees for middle-scale fishing gears were canceled. Following these legal documents, the Ministry of Agriculture, Forestry and Fisheries issued a proclamation to establish the new office of the Community Fisheries Development Office in the Department of Fisheries, which is considered as a key element to support the reform process.

A sub-decree on community fisheries management was prepared and had broad public consultation. The sub-decree on community fisheries management was passed at the inter-ministerial meeting and is now waiting for approval by the Council of Ministers before it is signed by the Prime Minister.

In line with the fisheries policy reform, a new Fisheries Law was drafted. The new Fisheries Law provides a legislative framework for the new fisheries management structure envisaged under the policy reform. The draft of the new Fisheries Law is currently being submitted to the National Assembly for approval.

Capacity-building activities

Capacity building is an important requirement for the fisheries reform. A number of capacity-building activities have been provided; these included a series of training (local and international), seminars and workshops. The staffs of the Community Fisheries Development Office were provided trainers' training in order to conduct follow-up training for the provincial fisheries line agencies. Some basis skills important for the community

fisheries organization such as facilitation and communication have been provided to the DoF and provincial DoF stations.

Involvement of NGOs and donors

Prior to the signing of the Paris Peace Accords in 1991, relatively few NGOs operated in Cambodia. The number of NGOs increased dramatically after the Accords were finalized. Recognizing the lack of resources, the Royal Government of Cambodia considers NGOs and donors as development partners. The involvement of NGOs in natural resources management and protection contributes to the capacity of the government's agencies and helps facilitate the improvement of the regulatory framework for the management and sustainable use of natural resources.

The fisheries policy reform has created considerable opportunities for NGOs and donors to play an important role in supporting the establishment of community fisheries, where it is generally recognized that they have good skills and experiences in community organization and advocacy. The active involvement of NGOs and donors in the fisheries reform process is encouraged by the Department of Fisheries. These initiatives are needed to support the DoF's activities, especially with the limited resources available to conduct capacity building required to make community fisheries progress smoothly.

Impact of fisheries reform

Since the fisheries reform, local people, especially those who live inside or near the fishing grounds, have enjoyed direct and indirect benefits from thousands of hectares of fishing grounds released from the fishing lots. A study of the fisheries policy reform conducted by the Community Fisheries Development Office and supported by the Department for International Development (DFID) has shown the impact on many aspects, including fisheries resources, poverty alleviation, food security and institutional arrangements. Results indicated that the impact on poverty has been diverse and is mainly dependent on local conditions and groups of people. Immediately after the policy reform, communities located within or adjacent to the area of fishing lots released experienced positive impacts on their livelihoods through easier and more secure access to fisheries resources, thus reducing costs due to the cancellation of license fees on middle-scale fishing, resulting in an improvement of their income and food security.

New policy of the third mandated Royal Government of Cambodia

More than a year after the National Assembly Election in July 2003, the Royal Government of Cambodia (RGC) was formed on 14 July 2004. The fisheries sector is considered as one of the four sides of the first rectangular policy of the RGC. The RGC policy focuses on three mains areas:

- transferring by the government of fishing lots where the concession contract has expired into fish sanctuaries, thereby increasing fish stocks and conserving endangered species;
- expansion of the fishing areas for local people's use through the establishment of community fisheries; and
- promotion of fish aquaculture in order to respond to the increasing demand for fish and reduce the pressure on the resources.

The ultimate goal is to manage, conserve and develop the fisheries sector to ensure food security, socio-economic development and improve people's livelihood. Under the third mandate of the Royal Government of Cambodia, the DoF has prepared the fisheries policy that focuses on six main areas, namely:

- to ensure the management and development of the fisheries sector for food security and poverty alleviation;
- to encourage community fisheries management and small-scale fishing;
- to promote aquaculture in order to release pressure on the natural fish resources;
- to develop, manage and improve the quality of post-harvest tecnology;
- to promote fish conservation and protection; and
- to develop and strengthen fisheries institutions and organizations.

Issues and recommendations

The following table outlines the most recent issues in the Cambodian fisheries sector.

Table 1. Issues in the Cambodian fisheries sector and recommendations to address them.

	Issues	Recommendations
Destructive fishing gear		
a. Electro-fishing	This is used almost everywhere both in marine and inland fisheries. It is cheap, easy to use and fast in catching fish. Used by only one person, this gear is considered as the most destructive for the fishery resources.	The use of this gear must be stopped through the following: strictly and strongly punish those who produce and use the gear; ensure local participation through community fisheries in close collaboration with the commune council; conduct a house-to-house information campaign to explain to those using the gear about its disadvantages and encourage them to stop.
b. Mosquito mesh net	This gear is also popular, but labor-intensive. It is considered destructive because it can catch small juvenile fish that have the potential to grow bigger and have more value.	Law enforcement must be strict and the fisheries officers must be highly responsible and work in close collaboration with the local authorities. Moreover, the CF committee needs to be strengthened.
Community fisheries		
a. Capacity	So far, 360 community fisheries have been established in the whole country. However, these CFs lack the ability to implement activities effectively. This is due to the lack of resources to implement as well as capacity and management skills in order to work effectively.	Training and backstopping should be provided and some resources should be made available to the CFs.
b. Institutional support	Many CFs have already been established, but support from the relevant institutions is limited.	The legal status needs to be resolved when the sub-decree on community fisheries management is officially approved by the Prime Minister, and the support mobilization needs to be coordinated.
c. Enforcement authority for the CF	There are still illegal fishing activities in the CFs' fishing areas. Many CFs have no bylaws or management plans and the cooperation between the CF's committee with the local authority has not been done in a broad way yet.	In the absence of the sub-decree on community fisheries, cooperation between the CF's committee and local authority (commune council) need to be strengthened in order to stop illegal fishing activities.
Fishing pressure		
Fishing pressure	Fishing and farming are important economic activities for rural people in Cambodia. Fishing is especially attractive because the return is fast; therefore, the sector tends to be heavily exploited.	Alternative livelihoods for the fish-dependent people need to be identified and understood. These might include the development of aquaculture and post-harvest technology.

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6 Governance and Institutional Changes in Fisheries in the Philippines

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Introduction

The Philippines has witnessed a rapid development of its fisheries and aquatic resources during the past several decades. However, there are signs that fish production is reaching its natural biological limits and in some cases, has even surpassed them. Aquaculture production has delivered part of its expected potential, but is facing serious constraints, while municipal fishing continues to dwindle. Fish production cannot cope with population growth and the poverty among coastal and inland fishers. The degradation of the aquatic environment continues without any signs of easing up, and the negative impacts of pollution, illegal fishing and excessive fishing effort on both capture fisheries and aquaculture are now being felt.

The Philippine fisheries sector is faced with a crisis situation that necessitates immediate change, redirection and refocusing of program thrusts in governance, institution, and legislation to address pressing needs on food security and environmental sustainability. International and regional institutions, and donor agencies have provided a much-needed framework for global and national efforts to ensure sustainable exploitation of aquatic living resources in harmony with the environment. This came at a very opportune time by establishing principles and standards applicable to the conservation, management and development of all fisheries with emphasis on social equity and resource allocation.

This paper presents the various changes and initiatives taken by the government and the different sectors of the fishery industry in the Philippines to cope with modal shifts brought about by socio-ecological factors in the last decades. It points out significant milestones that transpired after the adoption of major international/regional covenants, policies local legislations and the impact of these policies on the livelihood of the fishers and the resource environment.

Paradigm shifts in fisheries management

The fishery sector is traditionally a production-oriented resource sector. For the past several years, the government has been accelerating the integrated development of the fisheries industry to increase production, while implementing measures to prevent depletion of the resource, especially in traditional fishing grounds. In the 1980s, policy directions were geared towards the effects of the new regime of the sea and the country's declaration, together with others, of a 200-mile exclusive economic zone (EEZ) and jurisdictional ownership of its offshore areas. The fishing industry set up adequate responses to these four challenges:

- Need for expansion of its operations in untapped fishing grounds
- Stabilization of domestic prices
- Need for modern and more efficient fishing and fish farming technology
- Danger posed by over-exploitation and illegal fishing

The Bureau of Fisheries and Aquatic Resources (BFAR) implemented the Expanded Fish Production Program, an operational plan based on the National Integrated Fisheries Development Plan with the following thrusts:

- Increased production and improved distribution
- Export expansion and import substitution
- Creation of livelihood opportunities for rural families
- Research, extension and training in aquaculture and fishery technology

Over the years, the policies, plans and programs stemmed from issues and concerns that have remained pervasive, specifically the continuous depletion and degradation of aquatic resources and the seemingly hopeless state of impoverishment of the country's subsistence fishers. These concerns were not new, as the same issues had been consistently detailed in past programs and policies. This is probably because previous approaches failed to address these issues adequately; or because the problems have become so intractable that simple solutions are merely palliative. Compounded by inherent weaknesses of the institutions administering fisheries, the issues now plaguing the sector still closely reflect past problems (Figure 1).

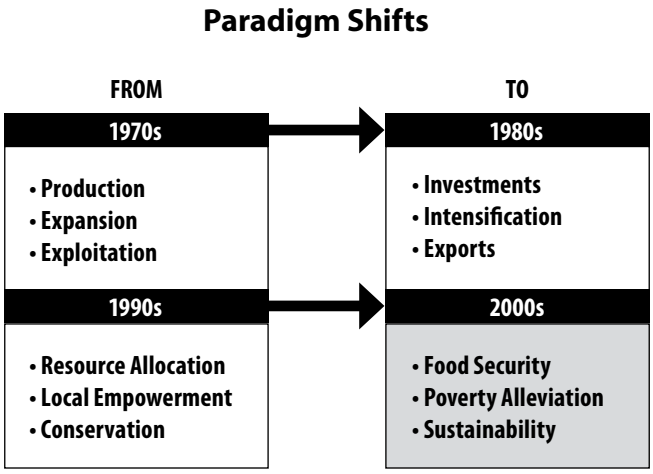

Figure 1. Paradigm shifts in Philippine fisheries management during the last three decades.

During the 1990s, the state policy statements shifted into more implementable program recommendations, such as:

- Allocating municipal fishery use rights for small-scale fishers.
- Amending fishery legislation
- Organizing private fisheries interest groups
- Creating incentives for the commercial fisheries sector to fish farther in the EEZ
- Managing and regulating the exploitation of internationally-shared tuna stocks
- Strengthening fisheries conservation and law enforcement
- Strengthening the fisheries educational system
- Improving the fish marketing infrastructure
- Protecting the domestic fish trade
- Intensifying aquaculture operations
- Strengthening the government's fisheries structure

It was not until the early part of the 1990s that the first significant milestone in Philippine fisheries has been achieved through the passage of the Local Government Code (LGC) of 1991 (Republic Act 7160), mandating municipal governments to manage their municipal waters that has been defined as the distance from the coast to 15 kilometers seaward. Section 3 of the LGC states that "Local government units (LGUs) shall share with the national government the responsibility in the management and maintenance of ecological balance within their territorial jurisdiction, subject to the

provision of the Code and national policies". Essentially, the LGUs were granted powers for effective governance. The right of the people to a balanced ecology and the enhancement of economic prosperity and social justice were emphasized when pursuing sustainable development.

The LGUs were further mandated by the Code to enact municipal fisheries ordinances and enforce these as well. The Code strongly promoted joint undertakings with non-governmental organizations (NGOs), people's organizations (POs) and others for the promotion of ecological balance and enhancement of the economic and social well-being of the people. The LGUs, coastal communities, local NGOs, POs and other organizations later led the implementation of the community-based resource management (CBRM) in their respective areas. These groups of stakeholders have the capability to enact and enforce laws, promote advocacy and implement management options. The harmonious relationship and interactions among these groups have created a formidable team in CBRM.

Another milestone in the mid-90s was the creation of the Fisheries and Aquatic Resources Management Councils (FARMCs) by virtue of Executive Order 240, which aimed to institutionalize the role of the local fishers and other resource users in community-based planning and implementation of policies and programs for the management, conservation, development and protection of fisheries and aquatic resources in municipal waters as defined by Republic Act 7160. The FARMCs are presently established in all *barangays*[1], municipalities and cities abutting municipal waters. In bays, gulfs, lakes and rivers bounded by two or more *barangays* or cities/ municipalities, an integrated or lake-wide FARMC was to be created.

The most significant milestone of the decade was the promulgation and approval of Republic Act No. 8550, the Philippine Fisheries Code of 1998. The Fisheries Code transformed Philippine fisheries from "open access" where anybody who wants to enter the fishery can do so, to "limited access" where the right to exploit fisheries/aquatic resources is regulated by the limits of the resource as determined by the best available evidence. This landmark legislation provides the policy, legal and institutional framework for the long-term conservation and sustainable use of fisheries resources. The following Declaration of Policy shows that it follows the objectives set

[1] smallest local government unit in the Philippines and is the term for a village, barrio, district, ward, or town. Municipalities and cities are composed of *barangays*.

forth in the Code of Conduct for Responsible Fisheries as a result of the 1982 United Nations Convention on the Law of the Sea (UNCLOS):

- Achievement of food security as the overriding consideration in the utilization, management, development, conservation and protection of fishery resources in order to provide the food needs of the population. A flexible policy towards the attainment of food security shall be adopted in response to changes in demographic trends for fish, emerging trends in the trade of fish and other aquatic products in domestic and international markets, and the law of supply and demand.
- Limit access to the fishery and aquatic resources of the Philippines for the exclusive use and enjoyment of Filipino citizens.
- Ensure the rational and sustainable development, management and conservation of the fishery and aquatic resources in Philippine waters including the Exclusive Economic Zone (EEZ) and in the adjacent seas, consistent with the primordial objective of maintaining a sound ecological balance, protecting and enhancing the quality of the environment.
- Protect the rights of fishers, especially of the local communities with priority to municipal fishers, in the preferential use of the municipal waters. Such preferential use, shall be based on, but not limited to, Maximum Sustainable Yield (MSY) or Total Allowable Catch (TAC) on the basis of resources and ecological conditions, and shall be consistent with our commitments under international treaties and agreements.
- Provide support to the fishery sector, primarily to the municipal fishers, including women and youth sectors, through appropriate technology and research, adequate financial, production, construction of post-harvest facilities, marketing assistance and other services. The protection of municipal fishers against foreign intrusion shall extend to offshore fishing grounds. Fish workers shall receive a just share for their labor in the utilization of marine and fishery resources.
- Manage the fishery and aquatic resources in a manner consistent with the concept of an integrated coastal area management in specific natural fishery management areas, appropriately supported by research, technical services and guidance provided by the State.
- Grant the private sector the privilege to utilize fishery resources under the basic concept that the grantee, licensee or permittee thereof shall be not only a privileged beneficiary of the State but also an active participant and partner of the Government in the sustainable development, management, conservation and protection of the fishery and aquatic resources of the country.

Furthermore, the Fisheries Code provides that the State shall ensure the attainment of the following objectives of the fishery sector:

- Conservation, protection and sustained management of the country's fishery and aquatic resources
- Poverty alleviation and the provision of supplementary livelihoods among municipal fishers
- Improvement of productivity of aquaculture within ecological limits
- Optimal utilization of offshore and deep-sea resources
- Upgrading of post-harvest technology

Three months before the enactment of Republic Act 8550, a related law addressing the industrialization of the agricultural economy geared towards expanding production and maximum utilization was promulgated, Republic Act 8435 or the Agriculture and Fisheries Modernization Act (AFMA). The law, however, was based on different premises and perspectives from fisheries, thus resulting in subtle tensions between the policies articulated by the two laws. The AFMA looks outward and is dedicated to integrating Philippine agriculture and fisheries into the world market. It espouses a market-oriented approach within a highly competitive environment and is inclined toward optimum production, with the use of resources motivated by the principles of efficiency and optimal use. The benefits sought are to be measured in terms of increased income, wealth, delivery of basic services and expanding productivity.

The Fisheries Code, on the other hand, looks inward and is more concerned with moderation and limitation of resource use at a level less than maximum. It aims to provide food security through careful husbanding of limited resources that are already under stress. Limitation of access to resources is the key principle in fisheries management. Rational and sustainable development implies a greater value being placed on conservation and maintenance of dwindling resources and the environment, rather than production. The Code is geared towards improving the efficiency of the domestic market and rationalizing the distribution of goods in the country rather than prioritizing exports.

Most recently, the Ginintuang Masaganang Ani (GMA) Fisheries Program for the next five years was refocused and designed to provide national direction and framework to develop and manage the country's fisheries

resources for food security and socio-economic improvement of subsistence fishers. The goals and objectives of the program are as follows:

- Contribute to national food security
- Ensure the rational and sustainable development, management, conservation of fishery and aquatic resources in the Philippine waters, including the EEZ and adjacent high waters
- Reduce poverty in coastal areas
- Enhance empowerment of people in the fisheries sector

The program thrusts are focused on:

- Improvement of aquaculture productivity within ecological limits
- Optimization of the utilization of offshore fisheries and deep-sea resources
- Improvement of product quality and reduction of post-harvest losses

Institutional changes in Philippine fisheries

The Fisheries Code of 1998 is the latest development in fisheries legislation that traces its roots to the beginning of the 20th century, when the American government introduced legal reforms to transform the old colonial Spanish legal and political system into a more modern republican system patterned after the United States. The reorganization of the Government of the Philippines through the enactment of the Administrative Code made possible the integration of fisheries into national production and development plans.

The changes in fisheries institutions and legislation in the Philippines may be divided into the following stages:

Stage 1: The Administrative Code of 1917: Fisheries management in the Philippines began with a simple provision in this Code under the title of Local Autonomy, which gave authority to the Municipal Council, for purposes of profit, to grant the exclusive privilege of fishery or right to establish a fish feeding ground within any definite portion, or area of the municipal waters.

Stage 2: The Fisheries Act of 1932 and subsequent amendments: It was not until 1932 when Act 4003, the first Fisheries Act, was introduced

following subsequent amendments such as the Commonwealth Act 471 in 1939, further expanding and refining fisheries management that prevailed from 1930s to the early 1970s. This Act created a national administrative regime for fisheries by placing fisheries management directly under the jurisdiction of the Secretary of Agriculture and Natural Resources, with the proviso that the Secretary may delegate such power to a subordinate representative, bureau, office or service. Act 4003 also reiterated most of the Local Autonomy provisions giving more authority to the Municipal Council in granting licenses.

Stage 3: Developments in the 1970s: There were no major changes in the fishery regime during the period from the 1940s to 1960s, except an innovation in fishery management when the Laguna Lake Development Authority (LLDA) was created. This was innovative in the sense that it was the first time a major fishing region was placed under the management of a corporate body operating independently of the Secretary of Agriculture. Also, under the Fishing Industry Development Decree of 1972, the fishing industry became a pioneer investment priority of the Board of Investments (BOI) for promoting integrated and accelerated development of the sector, further creating the Fishery Industry Development Council (FIDC). This was followed in 1974 by a Presidential Decree (P.D. 461) reorganizing the Department of Agriculture and Natural Resources (DANR) into two separate departments, one for agriculture and the other for natural resources. BFAR and FIDC belonged to the latter. The following year, all fishery legislations were integrated into P.D. 704, the Fisheries Decree of 1975.

Stage 4: Devolution of power and the Fisheries Code of the 1990s: In 1984, the Ministry of Agriculture was turned into Ministry of Agriculture and Food, which led to the transfer of the BFAR to the newly-renamed ministry and its reorganization into a staff bureau. The FIDC was abolished and the Philippine Fisheries Development Authority (PFDA) was transferred from the Ministry of Natural Resources to this new ministry. The fisheries management system under P.D. 704, as modified by the subsequent issuance mentioned above, prevailed until fishers groups and non-governmental organizations (NGOs) reached a critical mass, and began lobbying for fisheries reforms in the early 1990s. After several years of constant advocacy, the Local Government Code of 1991 and the Fisheries Code of 1998 were finally enacted.

Responses and feedback at the international and regional levels

Concerns similar to those being addressed at the national level on fishery resources management were on top of the agenda of international management bodies, regional governing councils and various conventions. The adoption in 1982 of the UNCLOS led to widespread introduction by nation States of the EEZs, heralding a new legal regime of the ocean. This gave coastal States rights and responsibilities in the management and use of fishery resources within their EEZs, which embrace some 90 percent of the world's marine fisheries. In recent years, coastal States, taking advantage of this new opportunity due to the great demand for fish and fishery products, began investing in modern fishing fleets and processing plants. It has become clear, however, that fishery resources could no longer sustain such rapid and often uncontrolled exploitation and development, thus the need arises to look for new approaches to fisheries management. The situation has been aggravated by unregulated fishing on the high seas that became a matter of serious concern.

Recognizing this untenable situation, the Committee on Fisheries (COFI) at its Nineteenth Session in March 1991 called for the development of new concepts that would lead to responsible and sustained fisheries. Subsequently, the International Conference on Responsible Fishing, held in 1992 in Cancun, Mexico further requested the Food and Agriculture Organization (FAO) to prepare an international Code of Conduct to address these concerns. The United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks was convened. In November 1993, the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas was adopted. Noting these and other developments in world fisheries, the FAO Governing Bodies recommended the formulation of a global Code of Conduct for Responsible Fisheries (CCRF).

The CCRF sets out principles and international standards of behavior for responsible practices to ensure the conservation, management and development of living aquatic resources, with due respect to the ecosystem and biodiversity. It recognizes the nutritional, economic, social, environmental and cultural importance of fisheries and the interests of all those concerned with the fishery sector. It takes into account the biological characteristics of the resources and their environment and the interests of consumers and other users.

The CCRF is a guiding principle for sustainable fisheries at the international and regional levels in all aspects of fisheries from production to marketing. However, it was felt that the guidelines or framework set out in the CCRF need to reflect the situation existing in the national context. Cognizant of this concern, the Southeast Asian Fisheries Development Center (SEAFDEC) initiated a program for its regionalization for the ASEAN countries to facilitate the implementation of the Code. The underlying concept for regionalization was to identify and prepare the most effective action for implementation of the Code at the national level by giving consideration to some factors that were identified as unique to the region.

The adoption of the Regional Guidelines by each state in the Southeast Asian region is a long-term commitment of SEAFDEC, and a priority in its 1998 Strategic Plan. For this to materialize, a series of workshop-consultations with country Core of Experts was conducted by SEAFDEC-designated Departments to tackle each article in the original CCRF covering Article 7 on Fisheries Management, Article 8 on Fishing Operations, Article 9 on Aquaculture Development, Article 10 on the Integration of Fisheries into Coastal Area Management, Article 11 on Post-harvest Practices and Trade, and Article 12 on Fisheries Research.

The Philippines participated actively in the consultations. Each Article Workshop group was represented by individual Core Experts including an overall National Coordinator acting as the Secretariat for its implementation. After several workshops, SEAFDEC was able to come up with the Regional Guidelines for Responsible Fishing Operation that corresponds to Article 8 of the CCRF, while the draft Article 9 of the Regional Guidelines was just recently adopted for government consultation. Working groups for Articles 7, 10, 11 and 12, however, are still in the process of conducting regional workshop-consultations at SEAFDEC- designated Departments to come up with regional draft guidelines.

The process of preparing the final drafts for each state, including the Philippines, to adopt the final guidelines will take several stages in order to fine-tune and most specifically, screen the fisheries issues in the country by way of consultations and public hearings for proper and appropriate implementation. Since the approval of the Fisheries Code in 1998, the Philippines has already implemented relevant policies, rules and fisheries regulations consistent with, and relevant to, the FAO Code of Conduct for Responsible Fisheries.

Institutional changes and impact on poverty reduction and food security

Decades of legislation indicate distinct trends driving fisheries management policy reforms. The management of fishery resources in the Philippines is a continuing process with fishery administration supported by research and monitoring of the state of the resource (Figure 2).

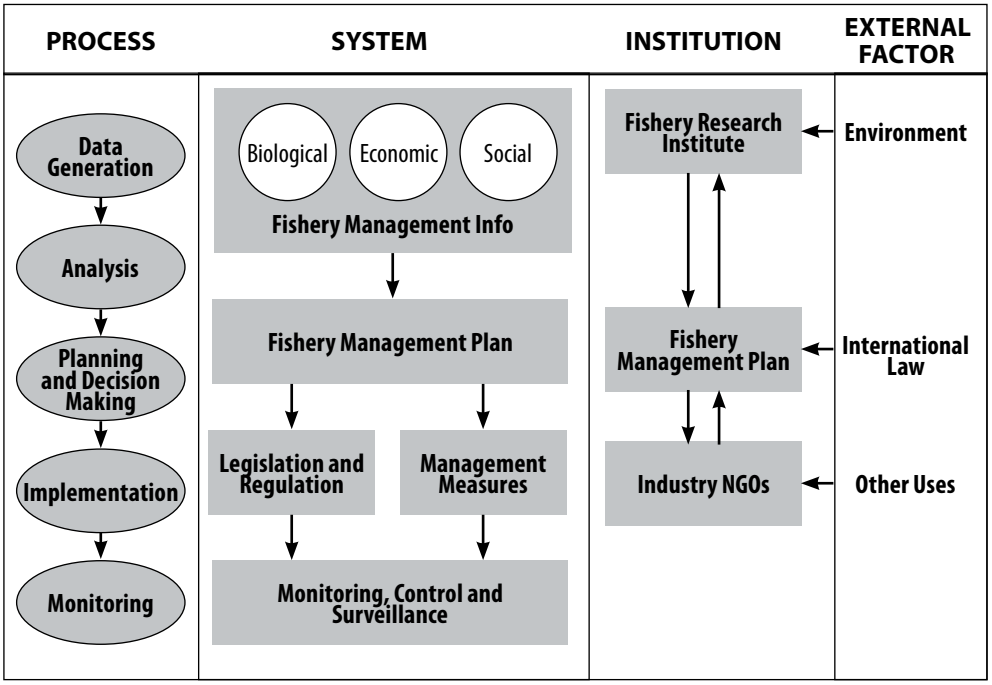

Figure 2. Diagram showing the various components of a fishery management system in the Philippines (Tan, F. 1996)

These fisheries management trends in the Philippines may be seen in a number of key areas, as follows:

Municipal-level management of fisheries: Fisheries activities have always been treated as locally-based activities, as part of the ordinary life in Philippine coastal communities and settlements. The Administrative Code of 1917 authorizing Municipal Councils to regulate the granting of exclusive fishery rights proves that fisheries are within the concern of the municipal government. However, how the resources may be allocated equitably remains unclear. How much one would be allowed to catch is unwritten, and how much rental and fee one should pay for utilizing a fishery resource is unresolved.

National fisheries management concerns: This used to be concerned with specific sectors that produce fishery products of high commercial value. The institutional disinclination against local fishing activities must change in light of the new policy that emphasizes food security as one objective of the new Fisheries Code. The priority placed on food security implies that policies and programs must be directed towards ensuring access to adequate food supplies and ensuring direct access to fisheries resources by coastal communities. The other side of the equation is ensuring that such fisheries resources, to which coastal communities have access, must be sustainable.

Centralization and decentralization of fisheries management: Centralized fisheries management results in inflexibility and inability to respond quickly to the demands of the resource and environment, aside from the attendant evils of monopolization of the economic sector. Fisheries resources thrive in a dynamic and often diverse underwater environment and, in the context of ecosystem diversity in the archipelago, require a decentralized system.

Focus of future medium-term Fisheries Development Plan: Three major national consultation workshops involving all sectors in fisheries were held separately in 1980 (Baguio), 1990 (Puerto Azul) and 2004 (Subic). All consultations were aimed at planning a five-year fisheries comprehensive development plan. The latest conforms to the blueprint of the national government thrusts for the next five years on reducing poverty, addressing food security, generating employment and encouraging rural development in coastal communities.

Role of fishing and aquaculture industry in institutional change

The private sector contributed significantly to the development of fisheries and aquaculture in the Philippines. Private corporations have invested particularly in feed milling, processing, farming, farming equipment and supplies, and some have made attempts to integrate two or three of these components of the industry. Some feed millers provide free technical assistance and even credit on feeds to growers who patronize their products. Private laboratories provide health services at reasonable fees. Some corporations also invest in Research and Development (R&D). For example, San Miguel Foods, Inc. (SMFI) has done research on shrimp feeds and feeding, farming systems and hatcheries. The company used to have an R&D center in Calatrava, Negros Occidental during the peak of shrimp

farming in the country in the 1980s. It was also during the heyday of shrimp farming that the Negros Prawn Producers' Marketing Cooperative, Inc. (NPPMCI), in Bacolod City, Negros Occidental, became active. In addition to assistance on marketing, the cooperative also provided laboratory and farm technical assistance to its members.

The commercial fishing sector, on the other hand, voluntarily organized a "Tuna Council" that will represent the country in various international and regional agreements on tuna exploitation along the Indo-Pacific rim. The municipal fishers, for their part, strongly defended the archipelagic principle in the delineation of boundaries for municipal waters, in which the 15-km zone is measured seaward from the outermost island of the municipality.

Although there are numerous NGOs and POs in the Philippines, their contribution to aquaculture development has been minimal. However, the field provides more areas for their involvement especially now that there is an increasing pressure on the Government and civil society to play an active role on poverty alleviation in rural areas. There are three points in which the fishing and aquaculture industries should meet to further develop the industry, which are:

- Improvement and development of export markets to be globally competitive
- Observance of good management practices (GMP) following the Hazard Analysis and Critical Control Point System (HACCP)
- Regulation and monitoring of domestic market products to prevent production glut and flooding of the market, competition among producers and traders, and price destabilization

Role of international and local NGOs in institutional change

In addition to advocacy, value formation, awareness and community organizing activities, the NGOs played a vital role in the planning and implementation of most community-based coastal resource management programs and projects in both the ADB-assisted Philippine Fisheries Sector Program and the Japan Bank for International Cooperation-supported Fisheries Resource Management Program. Participatory planning workshops in the community were among the initiatives of the NGOs in the orientation process of building a community organization. Project

evaluation and monitoring also involved NGO intervention, including the provision of training and education support to the community through information, education, and communication campaigns.

There are, however, internationally-based NGOs that are mostly pro-environment and conservation, while others promote anti-development and anti-industrialization. While there are conflicting agendas among various NGOs on their participatory programs and interventions, the majority are engaged in community organizing, capacity building and rural development. Recognizing the limitations of the government sector in terms of time and personnel involvement, NGO-PO participation in the calls for management changes had been effective.

Role of donors in institutional change

Donor contributions play a significant role in instituting and implementing a program to meet the challenges brought about by the changes. There are three identified well-known sources of funding for fisheries projects in the Philippines: international, regional and local. International and regional donors are mostly attuned to global and regional needs for the policy changes brought about by compliance with international conventions that often dictate or encourage (optional/obligatory) members (in case of organizations) or individual states to follow or adopt, e.g. the General Agreement on Tariffs and Trade-World Trade Organization (GATT-WTO), HACCP and Sanitary and Phyto-sanitary (SPS) compliance. National or local donors are mostly politicians who are part of the legislative body enacting laws, rules and regulations, and want to benefit from the institutional changes either for political or humanitarian reasons. There are, however, other private or governmental institutions that voluntarily act as donors because they are mandated to do so or are concerned with the impact of the changes on fisheries management.

As an example, the success of tilapia production in the Philippines is a result of national, regional and international cooperation and networking in the following interventions:

(1) Government support for research and extension
(2) Government moratorium on tilapia price and market intervention
(3) Cooperation between the Government and the private sector

(4) Cooperation and support of many international organizations, including the International Center for Living Aquatic Resources Management (ICLARM, now the WorldFish Center), United Nations Development Programme (UNDP), and Asian Development Bank (ADB) for providing material and financial support
(5) Introduction of new breeding stock (Nile tilapia) from a donor country
(6) Cooperation among researchers

The year 1988 was a landmark in tilapia aquaculture when ICLARM initiated a program to develop an improved strain of tilapia for low-cost sustainable aquaculture, with funding from ADB and UNDP, which resulted in the production of GIFT or Genetically Improved Farmed Tilapia. The other collaborators in the GIFT Project were BFAR, Central Luzon State University (CLSU) and Norway's Institute for Aquaculture Research (AKVAFORSK). During the same year, the British Overseas Development Agency (ODA) also funded the project on Genetic Manipulation for Improved Tilapia (GMIT). Both projects were done at the CLSU campus.

In November 2002, a "Regional Donor Consultation on the Role of Aquaculture and Living Aquatic Resources: Prioritizing Support and Networking" was held in Manila and attended by well-known international and regional institutions and donors, such as the WorldFish Center, UNDP, FAO, Mekong River Commission (MRC), SEAFDEC, Network of Aquaculture Centers in the Asia-Pacific (NACA), Australian Center for International Agricultural Research (ACIAR), ADB, United States Agency for International Development (USAID), Australian Agency for International Development (AusAID), Japan International Cooperation Agency (JICA), European Union (EU), Directorate General for international Cooperation (DGCI) of Belgium, Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ), and Norwegian Agency for Development Cooperation (NORAD). The following priorities were identified during the consultation:

- Productivity of small-holder livestock and aquaculture
- Techno-policies for fishery product quality and food security requirements
- Development of sustainable fisheries and aquaculture systems
- Consolidation of available research knowledge for use of small-holders, extension workers and educators
- Policy-making awareness

- Access to rural credit
- Governance issues in inland fisheries/access to water resources
- Assessing impacts of projects against some poverty indicators
- "Demand-Supply" prioritizing pro-poor projects

Future direction of fisheries institutions in relation to poverty reduction and environmental sustainability

It is a national policy to give preference to the poor for the use of fishery resources. Both the Local Government Code of 1991 (R.A. 7160) and the Philippine Fisheries Code of 1998 (R.A. 8550) cite this "preferential right" explicitly. R.A. 7160 states that in the granting of fishery privileges within a definite zone of the municipal waters, "duly registered organizations and cooperatives of marginal fishermen shall have the preferential right to such fishery privileges". R.A. 8550 states that the present Fishpond Lease Agreements (FLAs) for brackish water fishponds shall be entitled to only one 25-year extension, after which the new FLA shall be granted with "preference primarily to qualified fisherfolk cooperatives/associations". Another section of R.A. 8550 states that: "No new concessions, licenses, permits, leases and other similar privileges for the establishment of fish pens, fish cages, fish corrals/traps and other similar structures in municipal waters shall be granted except to municipal fisherfolk and their organizations."

There were efforts by the Government to encourage the poor to engage in various aquaculture programs and projects. These include the Fishpond Estate Project, National Rice-Fish Farming Program and Laguna de Bay Fishpen Development Project. Not many of these projects met their objectives due to the following circumstances:

- **The Fishpond Estate Project** aimed to promote wider participation of small-holders in brackish water fishpond operations. The proposed approach was for the Government to develop small fishponds for allocation to small-holders through a financing plan and provision of technical and marketing support. However, the project never took off as intended, probably due to lack of funding.

- **The National Rice-Fish Farming Program** aimed at increasing the income of rice farmers and improving their nutritional status. The program's failure was blamed on the prevalent use of high yielding rice varieties that required heavy use of fertilizers and pesticides.

- **The Laguna de Bay Fishpen Development Project** aimed to provide an opportunity for the small-scale fishers in Laguna de Bay to participate in the lucrative fishpen industry. The project failed because of natural factors such as typhoons and the proliferation of water hyacinth, including the government's rules and procedures that hampered the project's ability to respond in a timely manner.

As aquaculture and fisheries in the Philippines continue to expand, environmental and social issues are emerging which the sector has to face. Most notable among these are the increasing fish kills in cage culture and the degradation of municipal fishing grounds. The Government, industry and civil society are gradually responding to these challenges. They are currently working together to formulate a national framework for sustainable fishing and aquaculture in the country.

Relevant policies on environmental issues exist in the Philippines. However, although some rules and regulations are already in place, their implementation is still much to be desired. Pursuant to the Fisheries Code of 1998, a Code of Practice in Aquaculture was formulated, but this has yet to be revised to make it enforceable. The Fisheries Code requires that the Government formulate incentives and disincentives. Examples are effluent charges, user fees and negotiable permits to encourage compliance with environmental standards and promote sustainable management practices. Aquaculture facilities should only be constructed within established zones and they should not obstruct navigation and the migration path of migratory fishes.

The creation of FARMCs, on the other hand, as provided for by R.A. 7160 and R.A. 8550, aims to safeguard the common cause of local fishers. They were empowered to chart directions toward poverty alleviation and a sound environment. In many instances, however, it is observed that they have a very small role and contribution in the decision making of the LGU. This may be due to the lack of knowledge by the LGU and by the fishers themselves about the rules and responsibilities of the FARMCs. There are cases when members think that their organization is established to give out loans. Thus, the Department of Agriculture must issue guidelines on the mechanics of FARMC organization, raise public awareness and provide education on the purpose of their organization, as well as the responsibilities, functions and authority of members which must be duly recognized by

the LGUs concerned. There are calls for the abolition of double taxation (R.A. 4850 or R.A. 7160) imposed by the LGUs and LLDA. There are cases where LGUs overpower national laws and policies by creating their own interpretation of the rules and regulations in fisheries.

Summary and Conclusion

Certain key and historical trends will play a dominant role in molding fisheries management within the next decade. Firstly, there should be a devolution of management responsibilities to local levels. If the national Government cannot respond to various demands and requirements to support capacity building for fisheries management, local governments will need alternative sources of guidance, such as the NGOs and the private sector to keep up with the perennial, long-term and undying issues on social development and the environment in fisheries.

Secondly, national fisheries management will have to refocus and concentrate energies on specific and defined fisheries production sectors that are less geographically bound to municipal jurisdictions. It must also expand and turn its management functions towards addressing the rural poor sector of the industry. It should provide appropriate technology for the poor and develop the rural fisheries community by providing basic services. The emerging roles of national fisheries management institutions are likely to be less concerned with the actual "field" management functions and implementation responsibilities, and will eventually be turned increasingly toward technical and financial support and broad policy guidance.

Thirdly, fisheries policy formulation will become an increasingly complex task, as the inherent tensions between local and national concerns and priorities will likely become the source of prolonged discussions and disputes at the policy-making level. The process of devolution and decentralization will continue to present interesting and unique challenges, and in fisheries management, the primary concern will be finding the right balance between the various international, regional, national and local management bodies in their areas of concern to properly address poverty alleviation and environmental degradation.

In summary, the coming decades will be occupied with an attempt to strike a new balance between institutional forces and resolve tensions created by a historical movement towards decentralized fishery management. How the

Government, NGOs, the fishing and aquaculture sectors, other stakeholders, and the general public respond to these changes and challenges will define their future roles in the newly emerging system of fisheries management in the Philippines.

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7 Issues and Priorities for Research
(Output of Group Discussions)

Group 1

Changes and Impacts

1. Major institutional changes

   a. Paradigm shifts
      - Sustainable development and poverty reduction
      - Development models: growth to trickle down to the poor vs. targeting poverty-focused development
      - Trade: fish gone global

   b. Recognition of multi-stakeholder and multi-institutional approach

   c. Marketing and globalization
      - Shift from subsistence to commercial
      - Food safety standards and trade

   d. Governance changes
      - Geographic decentralization and devolution from capital city ministries to local governments (Bangladesh, Philippines, Thailand, Mozambique, Malawi)
      - Organizational decentralization from central Department of Fisheries to provincial/district
      - Mono- to multi-stakeholder/multi-institutional governance system
      - Participation of non-governmental organizations (NGOs), community-based organizations (CBOs), and special interest groups
      - Privatization of extension services and growth of the private sector (e.g. service provision)
      - "Market" deregulation
      - "Fishing community" (Beach Committee, Village Committee, People's Organization, etc.)
      - Democratization process: appointed and elected

   e. Creation of the Ministry of Environment

2. Institutional changes that have the greatest impact on fisheries and aquaculture

a. Governance changes: decentralization
   - Enabling legislation allowed local organization to become part of management (Bangladesh, Cambodia, Malawi, Mozambique)
   - Private sector: NGO influence has broadened and widened views about development
   - Governmental institutions have been reoriented
   - Advocacy of the NGOs has produced greater focus by government on social inclusion and participation by the poor

b. Privatization of extension services: changing role of government and CBOs
   - Government capacity did not improve fast enough to provide support
   - More inter-linkages at the middle and lower level than at the national level

c. National links toward global commitments
   - All global policies are (endorsed) coming from the countries
   - No mechanisms in countries to communicate and get feedback from middle and lower levels (institutional failure)
   - Unable to address poverty agenda adequately in the implementation process
   - No bargaining powers of fishers and fish farmers with finance ministries and other bodies that provide budgetary and tax advantage

d. Institutional responses to global and national commitments
   - Some changes have threatened existing institutions and their traditional functions
   - Provided opportunities for existing institutions to link horizontally and vertically
   - Institutions are slowly reforming

e. Corporatization of fisheries and aquaculture activities
   - Government budget is inadequate to support the poor and small-holders

3. Effect of the changes on fishers, traders, fish workers and other stakeholders

    a. Not evident and needs research

    b. Increased impact of globalization affecting small-scale producers

    c. New developments in both domestic and international markets, safety issues, traceability, regulations

    d. Increased risk: volatility of price and demand due to regulations and barriers

4. Impacts of institutional changes on poverty reduction and environmental governance

    a. Not fully understood, evidence is scarce, and needs further study

    b. Need to understand the influence of environmental advocacy

    c. Fisheries has not been mainstreamed in Poverty Reduction Strategy Papers (PRSPs)
        - Poor and inadequate representation of fisheries in the development of PRSPs
        - Voices for fisheries are usually the NGOs and special interest groups

    d. Poverty impact
        - Well recognized at the policy level, but implementation is far behind
        - Translation at the national level is not happening or the pace is slow; needs research why this is so
        - Growth has been the main focus at the operational and implementation levels

    e. Impact of decentralization on resources has not been evident in most instances
        - Not enough guidelines for implementation by decentralized units
        - Role, influence and impacts of the Ministry of Environment on environmental management in fisheries not visible

5. Important issues in aquaculture and fisheries that should be addressed

    a. Marketization and globalization: help or hindrance

    b. Ecosystem protection and restoration of stocks and the environment: how to achieve this

    c. Management of marine protected areas (MPA) and local-level issues

    d. Climate change

6. Types of institutions needed to address poverty and the environment

    a. Mechanism for coordination among decentralized institutions

    b. New and clear mandates for institutions

    c. Change in scope and speed in research and education

    d. Research to provide answers to poverty and environment-related problems

    e. Policy reorientation of financing and credit institutions to support poor and small-scale sector

    f. Gap filling
        - Information
        - Specialized needs
        - Capacity building for GOs and NGOs to play both specialized and broader roles toward poverty and resource issues

Group 2

Suggested Actions and Recommendations

1. Suggested actions and recommendations

   a. We do recognize that there have been major changes in institutions and governance and these have major implications on poverty alleviation and environmental sustainability. However, the impacts of these changes need to be better understood for policy and development purposes.

   b. Those changes are not well documented and analyzed (partly because these are new/emerging issues).

   c. There is a strong need to undertake comparative analysis of changes in institutions and governance and its impacts on poverty and resource sustainability.

   d. Frameworks are useful, but there is a need to revisit the way we do research from a poverty alleviation angle.

   e. Look at institutional and governance changes in other natural resources, e.g. forestry, and look at similar issues in aquaculture from the agricultural point of view.

   f. Researchers should look at policy processes for a policy-relevant science.

2. Research agenda

   a. Review of methodologies and theories that have been used for looking at institutional changes, e.g. new institutional economics

   b. Global-local agenda
      - Institutional stress brought about by the need for compliance with international commitments
      - Reduction of fishing capacity and how community-based systems can address this, especially at the local-level where there are part-time fishers
      - Role of local ecological knowledge

c. Exclusion vs. inclusion: trade-off between poverty alleviation and environmental sustainability
   - MPAs in marine waters and sanctuaries in freshwater
   - Reduction of fishing capacity

d. Costs and benefits of decentralization
   - Transaction costs
   - Ways of defining performance of institutions

e. Interactions between private and public sectors
   - Level of partnership at different stages, contexts and ecosystems
   - Is there an optimal level of devolution?

f. Role of new arrangements such as centralization going on among the NGOs and fishers' organizations and their impacts

g. Power changes at different levels
   - Understand the distribution of power at the local level and how local communities react to changes in power relationships
   - Role and contribution of the local elite in institutional and governance changes, both positive and negative

h. New local institutions and how they are addressing issues such as management of transboundary and shared resources
   - Examples: Beach Village Committees and Local Fisheries Management Authorities

i. Appropriate mechanisms for intersectoral coordination and policy harmonization within the context of decentralization

j. Effect of information, education and communication on decentralized institutions

k. Markets, traceability and effects on poverty and institutional capacity required to ensure the interest of small-scale producers.

Appendix 1

WORKSHOP PROGRAM
Governance and Institutional Changes in Fisheries:
Impact on Poverty Reduction and Environmental Integrity
in Developing Countries

Wednesday, October 6, 2004

8:30	–	9:00	Registration
9:00	–	9:30	Introductory Remarks (JAMES MUIR)
9:30	–	10:30	Workshop methodology and discussion paper (MAHFUZ AHMED)
10:30	–	11:00	Break

Country Presentations: Africa

11:00	–	11:30	Mozambique (SIMEAO LOPES)
11:30	–	12:00	Malawi (STEVE DONDA)
12:00	–	1:00	Lunch
1:00	–	1:30	Open forum

Country Presentations: Asia

1:30	–	2:00	Bangladesh (NASIRUDDIN AHMED)
2:00	–	2:30	Cambodia (LY VUTHY)
2:30	–	3:00	Philippines (NELSON LOPEZ)
3:00	–	3:30	Open forum
3:30	–	4:00	Break

Discussion

4:00	–	5:30	Small group discussion on: institutional changes in fisheries and aquaculture, responses to these changes, contributions to poverty reduction and environmental protection

Thursday, October 7, 2004

8:30 – 9:30	Presentation of small group output and discussion
9:30 – 10:00	Suggested framework for an in-depth study of national policy and legislative changes (MAHFUZ AHMED)

Discussion

10:00 – 12:00	Small group discussion on: research agenda and framework for in-depth study
12:00 – 1:00	Lunch
1:00 – 2:00	Presentation of small group output and discussion

Conclusion

2:00 – 4:00	Finalization of research agenda and framework for in-depth study
4:00 – 4:30	Summary and closing

Appendix 2

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