

A Systems Analysis of Shrimp Production

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Program Development Office
for
Integrated Coastal Zone Management Plan
(PDO-ICZMP)

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FORWARD AND ACKNOWLEDGEMENT

This systems analysis of shrimp production went through several rounds of development. It has been written by lay people in the shrimp business, with the main purposes to understand the complex and complicated management issues of the sector and to make rational assessments of the institutional arrangements and a possible role of the PDO-ICZMP project in establishing a shrimp strategy.

The study was set up as a pilot project to look into the usefulness and feasibility of in-depth and integrated analyses of typical coastal issues that consider the natural/physical, social, economic and institutional subsystems and their relations. Other issues, tentatively selected for such an approach were: land development and disaster management.

The study concluded positively on the usefulness of the approach and the team grew convinced that this kind of analyses could support a harmonizing and coordinating role of ICZM, complementary to line agencies responsible for management of partial-aspects of shrimp production. However, negative conclusions had to be drawn on the feasibility to analyze other issues, given the limited time and budget resources available. After all, the several rounds of the analysis had taken about nine months, instead of the intended three months.

The principle investigator of this study had the task to make this systems-concept working by integrating the different disciplines. This was not an easy task in the sector- and discipline-wise-structured government and scientific societies. The study team is particularly grateful for the cooperation that was received from the Shrimp Action Plan Project (DFID and DoF partnership) that fully supported the concept and role of ICZM. Their vision and recommendations that ICZM offered “an unique chance to integrate shrimp sector policy within a framework policy document for the coastal zone and improve interagency coordination” [DoF, 2002a: 2], provided both a (post-) stimulus and justification for the present study. In addition, the district and upazila level DFOs and TNOs and the local NGOs that were approached during the field work are acknowledged for their heartiest cooperation.

The positive responses received contributed to the decision to publish this pilot study. The report is basically meant to document the PDO-ICZMP’s efforts to collect and analyze the diverse and often inconsistent information, aiming to improve on similar system analyses in a possible future of PDO-ICZMP. It is also hoped that it contributes to a better understanding of the shrimp sector and provides information (in particular in the identification of management tasks and their institutional and legal context) in addition to the many existing reports.

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A systems analysis of shrimp production

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ACRONYMS

ADC (Rev.)	Additional Deputy Commissioner
ATDP	Agro-based Industries and Technology Development Project
BBS	Bangladesh Bureau of Statistics
BARD	Bangladesh Rural Development Board
BCAS	Bangladesh Centre for Advanced Studies
BPB	Barisal, Patuakhali, Bhola
BWDB	Bangladesh Water Development Board
CARE	Co-operative American Relief Everywhere
CB	Cox's Bazar
CBOs	Community Based Organizations
CDS	Coastal Development Strategy
CZ	Coastal Zone
CZPo	Coastal Zone Policy
DANIDA	Danish International Development Agency
DAE	Department of Agricultural Extension
DC	Deputy Commissioner
DFID	Department for International Development
DFO	District Fisheries Officer
DIG	Deputy Inspector General
Div	Divisional
DoE	Department of Environment
DoF	Department of Fisheries
Dt	District
ECNFC	Executive Committee of the NFC
ECNWRC	Executive Committee of the NWRC
EPB	Export Promotion Bureau
EU	European Union
FAO	Food and Agriculture Organization
FD	Forest Department
FFP	Fourth Fisheries Project
FGD	Focus Group Discussions
GDP	Gross Domestic Product
GoB	Government of Bangladesh
HACCP	Hazard Analysis Critical Control Point (standard)
ICZMP	Integrated Coastal Zone Management Plan
KSB	Khulna, Satkhira, Bagerhat
LLP	Low Lift Pump
LFO	Local Community and Functional Organization
MLSS	Member of Last Service Stage
MoA	Ministry of Agriculture
MoC	Ministry of Commerce
MoEF	Ministry of Environment & Forest
MoFL	Ministry of Fisheries & Livestock
MoI	Ministry of Industries
MoL	Ministry of Land
MoWR	Ministry of Water Resources
NACA	Network for Aquaculture Centers in Asia-Pacific

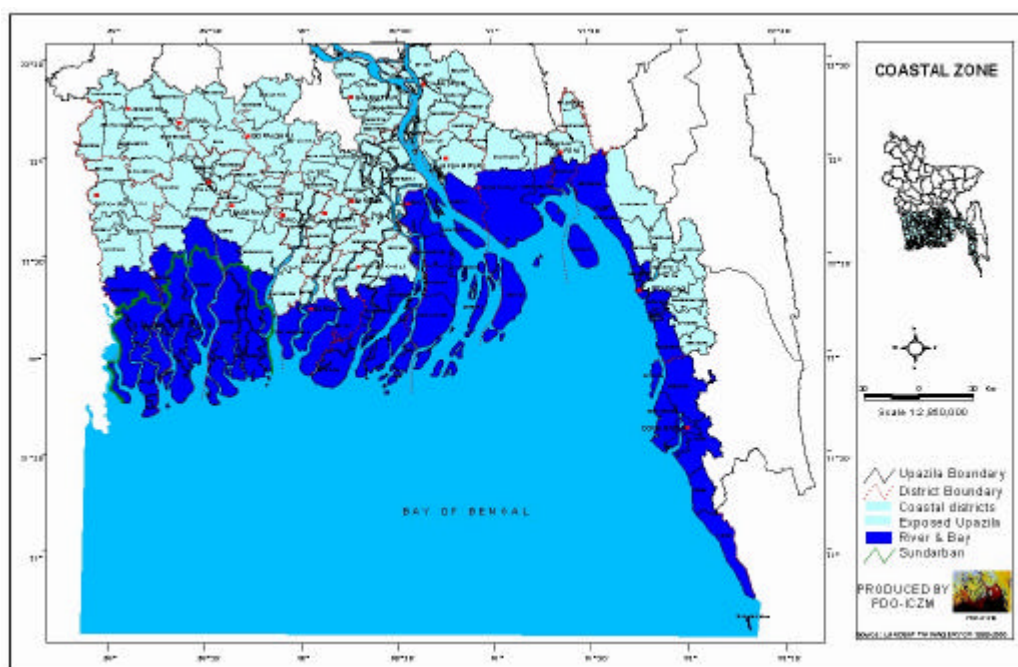
NFC	National Fish Council
NWRC	National Water Resource Council
OC	Officer in-Charge
PDO	Program Development Office for ICZMP
PIP	Priority Investment Program
PL	Post-Larvae
SAP	Shrimp Action Plan
SC	Steering Committee
SP	Superintendent of Police
TC	Technical Committee
TCB	Training Corporation of Bangladesh
TFO	Thana Fisheries Officer
TNO	Thana Nirbahi Officer
UZ	Upazilla
WARPO	Water Resources Planning Organization

SUMMARY

The context

The PDO-ICZMP project (Feb. 2002 - Jan. 2005) is a first step in implementing a GoB policy on ICZMP. In 1999, a GoB Policy Note and a Joint Donor Identification Mission Concept Note established the overall goal of coastal development: *to create conditions in which the development of sustainable livelihoods and the integration of the coastal zone into national processes can take place*. The PDO-ICZMP project aims to structure and introduce a *process*, culminating in a Coastal Development Strategy (CDS) and the policy framework and mechanisms required for its implementation, rather than producing a master plan. The strategy will contain a series of priority projects and programs. The PDO-ICZMP project resorts under inter-departmental Steering and Technical Committees, chaired by the Minister and the Secretary of the Ministry of Water Resources, respectively.

The Coastal Zone



PDO-ICZMP's shrimp study was started to find out:

- ◇ whether an *integrated analysis of organizations, legal and regulatory instruments* could be done through an issue-oriented approach (such as shrimp); and
- ◇ what *role PDO-ICZMP can play* in creating and managing a platform for harmonization and coordination needed for ICZMP?

The main purpose of the integrated analysis was a diagnosis:

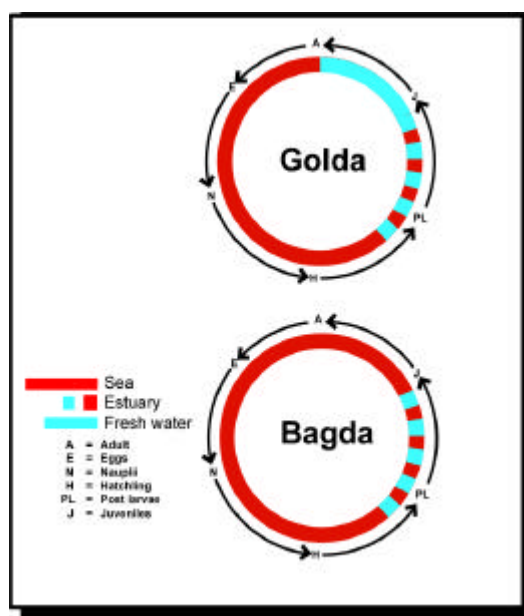
- ◇ to understand all aspects of the system of shrimp production and in particular, whether institutions are adequately provided with mandates, legal and regulatory instruments and capacities to perform the government's tasks; and
- ◇ to understand where the bottlenecks for effective and efficient management lie.

Aspects of shrimp production

Bagda (shrimp) and golda (prawn) production is done in four distinctive stages: fry collection; farming; processing and export. Bagda farming (salt water shrimp) still generates main part of the sector's income (about 80%), though fresh water oriented golda farming has more potential to grow; it is environmentally less unfriendly and socially more acceptable. Fry collection and farming are important sources of livelihood for about 750,000 people in the coastal zone (about 90% of total employment in the shrimp sector). For fry collectors and shrimp farmers – which belong to the poorer sections of the coastal communities -- shrimp related activities account for about 50 % of the household income.

Though the sector as a whole contributes substantially to the national economy (around 6% of the total export value), benefits are very unequally distributed. This holds in particular for the fry collectors (about 400,000 people or 50 % of the total sector-employment), which receive only about 6 % of the profits made by the sector as a whole (value added).

Schematic lifecycles of golda and bagda



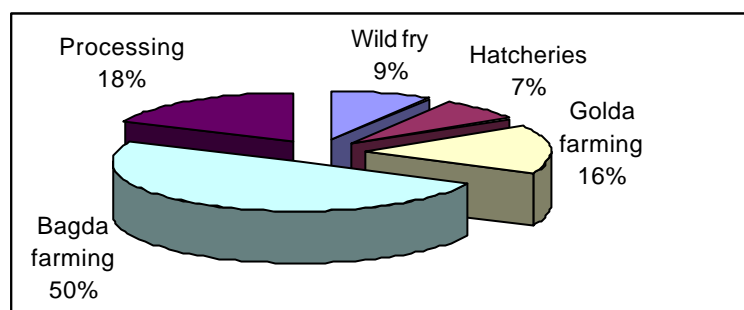
Review of the instruments of policies, laws and institutions (referred to as institutional arrangements) has suggested that these are not a limiting factor to develop and implement an effective and efficient management of the sector. Problems (see below) seem to concentrate on overall coordination, suffering from a lack of operational linking mechanisms between and among different ministries at national level (including: MoFL, MoL, MoWR, MoC, MoI), organizations at divisional, district and thana levels and private entities. The *National Fish Council* headed by the Hon'ble Prime Minister and the *Executive Committee of National Fish Council* headed by Hon'ble Minister for Fisheries and Livestock, which have been proposed in the National Fish Policy [MoFL, 1998] are considered vital for the fish sector and particularly for the shrimp sub-sector. They have not yet been formed, however, in more than three years.

Management problems and crisis of the shrimp sub-sector

The general and major strength of the sector is its potential to meet a growing world demand for high quality shrimps, produced in an environmentally and socially sound way. Aspects of strength relate to the country's natural and human resources. Weaknesses, however, are manifold. They relate to technology and management and make the sector vulnerable to such major threats as:

diseases; product contamination; environmental damages; and international standards. The main weakness, however, at the moment, is the lack of a reliable quality control against product contamination and the failure of the government's enforcement system to control unsustainable profit-earning activities of some irresponsible private actors.

Distribution of value added



The GoB attaches high priority to shrimp farming. They have provided a host of financial and economic incentives and have simplified export procedures while development partners have been providing continuous financial and technologic support. Nevertheless, the sector seems at the brink of collapse in the light of international developments towards certification standards. Influential organizations, such as the World Wildlife Fund, the Global Aquaculture Alliance and others are developing codes of conduct in the areas of food safety and hygiene, environmental standards, fair labor practices and human rights. Failure to meet these standards will limit Bangladesh's access to the world market, will lead to international buyers losing confidence in shrimps coming from Bangladesh, and may ultimately result in consumer boycotts of shrimp from Bangladesh.

It is of high concern that Bangladesh -- having already difficulties to meet the present hygiene and food safety standards -- is not positioning itself proactively to meet these forthcoming international certification standards in contrast to many other shrimp producing countries. Experts agree: that *effective management is urgently needed* to save the shrimp sector; that the *conditions are optimal* to make this sector a key contributor to economic and social development in the country and in particular in the coastal zone; and that this only can be done under the *coordination of a proactive governance*.

Can PDO-ICZMP play a role?

The Shrimp Action Plan (SAP), [DoF, 2002a] suggested that the ICZMP program offers a unique chance to integrate a shrimp sector policy within a framework policy document for the coastal zone and improve interagency co-operation. This is well in line with the ICZMP goal as formulated by GoB (improvement of conditions for the development of sustainable livelihoods; and economic development) and also by the fact that the actual situation in the shrimp sector seems to offer proactive GoB management an excellent opportunity of a win-win approach, serving both objectives. The suggestion is also in line with the objectives and approach of the PDO-ICZMP project itself: to develop processes and mechanisms for integration and harmonization.

Bearing in mind that the PDO-ICZMP project does not aim to develop a new organization or agency but rather to provide a platform for harmonization of government policies, strategies and actions, potential roles of the PDO-ICZMP project could include assistance in:

- ◇ moderating the process of harmonization of policies;
- ◇ formulating a sector strategy and implementation plan;
- ◇ monitoring developments and implementation;
- ◇ keeping track of projects in the shrimp sector; and

- ◇ defining the role of the government and the private sector.

Assuming an agreement in principle on the above depicted role of the PDO-ICZMP project, the question arises how to further operationalize such a role.

An immediate possibility seems to be a supportive role in preparing a *sector strategy and implementation plan* as recommended in the recently published SAP. Formulation of such a strategy and implementation plan is a complicated process, that needs to go through such stages as: formulating concrete objectives and targets; identifying and prioritizing interventions and corresponding schedules; designing institutional arrangements for implementation; and developing indicators to measure achievements. This requires intensive interactions between all stakeholders, supported by national and international experts.

It is proposed that the PDO-ICZMP project is instrumental in preparing a “*proposal for a project to formulate a shrimp sector strategy and implementation plan*”. Such a proposal could be given the format of a Concept Note, as envisaged under the PDO-ICZMP project to become the operational arm of the CDS. These Concept Notes contain practical proposals for actions, elaborated to a level ready for immediate implementation by GoB agencies and donors. It is emphasized that this does not imply that such Concept Note proposals can only be executed after approval of the CDS. As part of the process-approach of ICZMP, these project proposals can be picked up for implementation at any convenient moment in time.

The proposed Concept Note would structure the process of strategy formulation and identify the required resources. Author of the Concept Note should be DoF, that should convene a dialogue with all agencies and stakeholders involved. The PDO-ICZMP project plays a facilitating role and would provide the integration under the ICZMP framework. This is expected to take a few months, depending on the collaboration of relevant agencies.

As mentioned, upon finalization, the Concept Note could be immediately submitted for approval and implementation, while at the same time becoming part of a “revolving” CDS. The following steps are proposed:

- ◇ an outline of a Concept Note is made and the approach is discussed with the major actors in the shrimp sector and the ICZMP project (WARPO/MoWR);
- ◇ a seconded officer is allocated from DoF, preferably from the MoFL (a senior Assistant Secretary), in the PDO office/team;
- ◇ a Task Group is formed in the Technical Committee of the ICZMP project (before proposing their formation, it will be advisable to discuss this with the relevant Department Chief or his representatives); and
- ◇ the Concept Note is developed between the PDO-ICZMP team and the TC’s Task Group, under chairmanship of the representative of DoF.

From the beginning, the PDO-ICZMP project should assume a *moderating rather than an executing role*. This would imply that the DoF in combination with the FFP staff would be invited to take the lead in development of such a Concept Note.

1 INTRODUCTION

1.1 Justification and scope

PDO's shrimp study was started to find out whether an *integrated analysis of organizations and legal and regulatory instruments* could be done through an *issue-oriented approach* (focusing for example on shrimp production, land settlements, fresh water supply, or disaster preparedness). The purpose of the integrated analysis is a twofold diagnosis:

- ◇ to understand whether institutions are adequately provided with mandates, instruments and capacities to perform the tasks needed to address problems related to the specific issue at hand; and
- ◇ to understand the institutional bottlenecks that seem to prevent implementation of the abundant amount of often highly relevant recommendations to solve problems at hand for the selected issues.

The justification for the issue-oriented approach is that after an overview analysis of the institutional framework was made [PDO-ICZMP, 2001] a similar general analysis of relevant legal and regulatory instruments for CZM would be beyond the scope of the PDO activities and moreover is considered not to be helpful in the identification of concrete interventions. It is further hoped that an issue-oriented approach in the context of ICZMP could initiate the preparation of implementable packages on organizational and instrumental measures that will genuinely contribute to the improvement of livelihood conditions.

In addition to these methodological goals, the shrimp study is considered a pilot in exploring roles of PDO in structuring and implementing ICZMP. Considering that in relation to many problems, a host of detailed technical studies exists of high quality and with corresponding useful and sound recommendations, but that these are not -- or hardly -- used in rational and effective decision making, the PDO wants to address the question: *how can PDO become instrumental in creating and managing a platform for preparing, implementing and monitoring rational decisions that serve the stated objectives of ICZMP?* A better understanding of the efficiency and effectiveness of institutional arrangements and an identification of the need for harmonized and coordinated management will enable the PDO to better assess possibilities to create an operational platform for the development and the implementation of GoB interventions. This is in fact a key trigger behind the approach.

The above implies that the study does not aim to make a direct contribution to solving the shrimp problem. Neither does it want to duplicate existing studies or make a complete overview and summary and prioritize their conclusions and recommendations. The study intends to obtain a comprehensive understanding of the shrimp problem throughout its total production chain, focusing on livelihood and institutional aspects. Such a study can be characterized as a *systems analysis of shrimp production*. As mentioned, an assessment of this study would greatly help the actual PDO-ICZMP project in defining its further actions and role in establishing an ICZMP for Bangladesh.

1.2 The PDO-ICZMP context

The PDO-ICZMP project (Feb. 2002 – Jan. 2005) is a first step in implementing a 1999 GoB Policy note on ICZMP and a 1999 Joint Donor Identification Mission Concept Note [PDO-ICZMP, 2002]. These documents established the overall goal of coastal development: *to create conditions in which the development of sustainable livelihoods and the integration of the coastal zone into national processes can take place*. Throughout the discussions, *poverty reduction* was and still is seen as the overarching objective of actions in coastal areas. Four inter-related objectives were formulated,

which addressed: reduction of vulnerabilities; improvement of resource management; empowerment of coastal communities; and preservation of critical ecosystems.

The principle means to achieve this objective were defined as follows:

- ◇ a process of *harmonization* between the policies and programs of different sectors;
- ◇ *capacity building* to strengthen organizations at the community and local government level and improve links between local, national and intermediate levels;
- ◇ specific, *targeted interventions* that combined hardware and software investments to reduce vulnerabilities and take advantage of opportunities in different parts of the coast; and
- ◇ establishment and improvement of the *knowledge base* needed to create a better understanding of the dynamics of the coastal area and to inform different types of decision making.

It was recognized that the special characteristics of the coastal zone, and in particular its vulnerabilities and opportunities, would require a special form of management. The approach adopted was to build a coastal development *process* and develop supporting institutional mechanisms within the existing management infrastructure.

The 3-year PDO-ICZMP project is a preparatory step in building such a process as reflected in its six defined outputs. Three of the outputs together relate to key stages in coastal development: the Coastal Zone Policy (CZPo); the Coastal Development Strategy (CDS); and the Priority Investment Program (PIP). The other three are: the improvement of community capacities to enhance their livelihoods; an enabling institutional environment; and the knowledge base.

The present in-depth study contributes to the review of the existing institutional and legal situation (activity 5.1, work plan 2003), complementary to overall reviews on institutions and legal and regulatory arrangements and a review of local institutional environment. Ultimately, these studies and reviews are expected to contribute to proposals for harmonization procedures enhancing the institutional environment (output 5).

1.3 Objectives

The study aims to contribute to the creation of an institutional environment for achieving the goal of coastal development (Section 1.2). The study's specific objectives are: to identify and analyze the stages of the shrimp production chain; and to conclude on a possible role PDO-ICZMP can play in an effective management of the shrimp sector. In its analysis, the study intends to focus on the livelihood aspects of shrimp production and on the institutional arrangements. Not only the present situation should be analyzed; attention should also be paid to trends that affect shrimp culture in Bangladesh.

1.4 Methodology

The study was set up along the following steps.

- i. Identify and understand all stages, components and aspects of the shrimp production chain.
- ii. Identify the main livelihoods involved in the complete production cycle and make an assessment of related problems.
- iii. Identify and assess the existing policies and institutional arrangements (organizations and legal and regulatory instruments).
- iv. Identify where the main bottlenecks lie and identify options for the PDO to play an operational role in developing and facilitating the implementation of policies and strategies.

Data and information on which this study is based have been collected from the following sources.

- Published reports of studies and research works relevant to shrimp culture. The number of these reports, made by various national and international organizations, is enormous. Use has been made of a recent BCAS review of about 300 available studies, which was published as an annotated bibliography [BCAS, 2001a].
- Relevant project documents of major shrimp culture projects undertaken by government and non-government organizations. This relates particularly to the studies under the Fourth Fisheries Project.
- Government notifications, policy documents, laws, acts, etc.
- Information on shrimp technology and future world trends, which have been downloaded from web-sites.
- Field visits to shrimp fields, processing plants, shrimp depots in Khulna and discussion with key informants.
- Focus Group Discussions (FGD) which were held in Khulna and attended by representatives of Community Based Organizations (CBOs), local and regional NGOs, Frozen Foods Exporters Association, journalists, Shrimp Farmers Association, Chingri Chashi Union (Prawn Farmers Union), Fry Collection Association, Hatchery Owners Association.
- Elite interviews (i.e., interviewing persons holding key positions) with public representatives and officials from DoF Head Office, Field Offices and the Ministry of Fisheries.

1.5 Limitations

The review is almost exclusively based on secondary information and on earlier studies in which only a few issues (such as: the total quantity of shrimp produced; the number of households involved in fry collection; and the employment statistics) are being debated. Substantial inconsistency was found in the database used by the different studies. These limitations will hamper efficient and effective management of the sector but were not of major influence on the findings of this study.

1.6 Outline of the report

The remainder of this report is organized in four sections. Chapter 2 describes the complete shrimp production chain, including its macro economic aspects and trends. Chapter 3 reviews the shrimp production culture from its livelihood perspective, while Chapter 4 describes the existing policy and legal instruments, the institutional arrangements and their adequacy and effectiveness. Chapter 5, finally, discusses a possible role of PDO in harmonizing and coordinating management of the shrimp sector. Appendices A to C give details on the policy regime, the legal regime and the institutional arrangements respectively.

2 THE SYSTEM OF SHRIMP PRODUCTION¹

2.1 The national perspective

Coastal shrimp aquaculture in Bangladesh was initiated in the late 1970ies. Unique natural features, including large areas (approx. 2.5 million hectares) of low-lying tidal land, favorable environment supported by almost 600,000 ha of natural and 100,000 ha of planted mangroves, combined with a high market demand and economic returns, facilitated its rapid expansion.

Coastal shrimp aquaculture is mainly confined to the districts of Khulna, Satkhira and Bagerhat in the Khulna Division and the districts Cox's Bazar, Chittagong and Noakhali in the Chittagong Division. Reference is made to the map of Figure 1.

The main cultivated species is *Peneus monodon* (tiger shrimp), more commonly referred to as **bagda** and *Macrobrachium rosenburgii* (giant freshwater prawn) commonly known as **golda**. In 2001, 25,000 tons of bagda (representing 58% of the total national shrimp production of 42,900 tons) and 12,000 tons of golda (28% of the total production) were produced [Banks, 2002]. Whilst production is orchestrated to produce bagda and golda, small amounts of other shrimp species (all salt/brackish water type) are also grown as a result of poor screening and wild shrimp post larvae (PL) being trapped in the tidal ponds. These are: *Fenneropenaeus indicus* (chaka or Indian white shrimp); *Metapenaeus monoceros* (horina or brown shrimp); *Penaeus semisulcatus* (green tiger shrimp); and *Fenneropenaeus merguensis* (banana shrimp). Together they account for about 6,000 tons, equivalent to 14% of the total production [Banks, 2002].

Bangladesh produces 2.5 percent of the global production of shrimp. In Bangladesh the shrimp sector is the second largest export industry, giving employment to 840,000 people [Frankenberger, 2002]. Values of total and shrimp exports of Bangladesh (total output in millions of US\$) are given in Figure 2 [BCAS, 2001b]. The same study mentions that the total contribution of the shrimp sector to the country's Gross Domestic Product (GDP) is estimated at 0.6%, but that frozen seafood accounts for around 6% of the total export value, of which shrimp export constitutes almost 90%.

Total sales from both bagda and golda farms in 2001 was Tk 17,169M (US\$ 301M) [Banks, 2002]. From this, bagda gher outputs account for 80% (Tk 13,864M or US\$ 243M), and golda gher outputs for 20% (Tk 3,305M or US\$ 58M). In case of bagda farms, approximately 82% of the earnings is derived from shrimp. In respect to golda farms approximately 75% are derived from golda.

In 2001, the total sector gross value added was estimated at Tk 15,942 M (US\$ 279M) [Banks, 2002]. Bagda gher are the highest contributors to this value added (50%; Tk 7,674M or US\$ 135M) [FFP, 2002], followed by golda gher (16%; Tk 2,389 M or US\$ 42M), processing (18%), fry collection (9%) and hatcheries (7%). See Figure 3.

¹ There is considerable doubt with respect to the numbers produced in this chapter. Information from different reports and DoF statistics differ hugely, while many reports appeared to be internally highly inconsistent. The lack of official and reliable information resulted in most studies making their own assumptions and estimates, based on fragmented information in different areas and in different years. Often such information is copied into other reports without proper reference and context, making an effort to sort out contradictory information to an impossible task. This holds for example, for the macro and farm economic aspects of the shrimp production but even more so for the livelihood aspects, such as employment and the part of household income generated through shrimp related activities. The PDO-study tried to grasp the main characteristics of the overall situation, drawing its data mostly from the studies recently made in the context of the FFP y from the studies recently made in the context of the FFP [Banks, 2002].

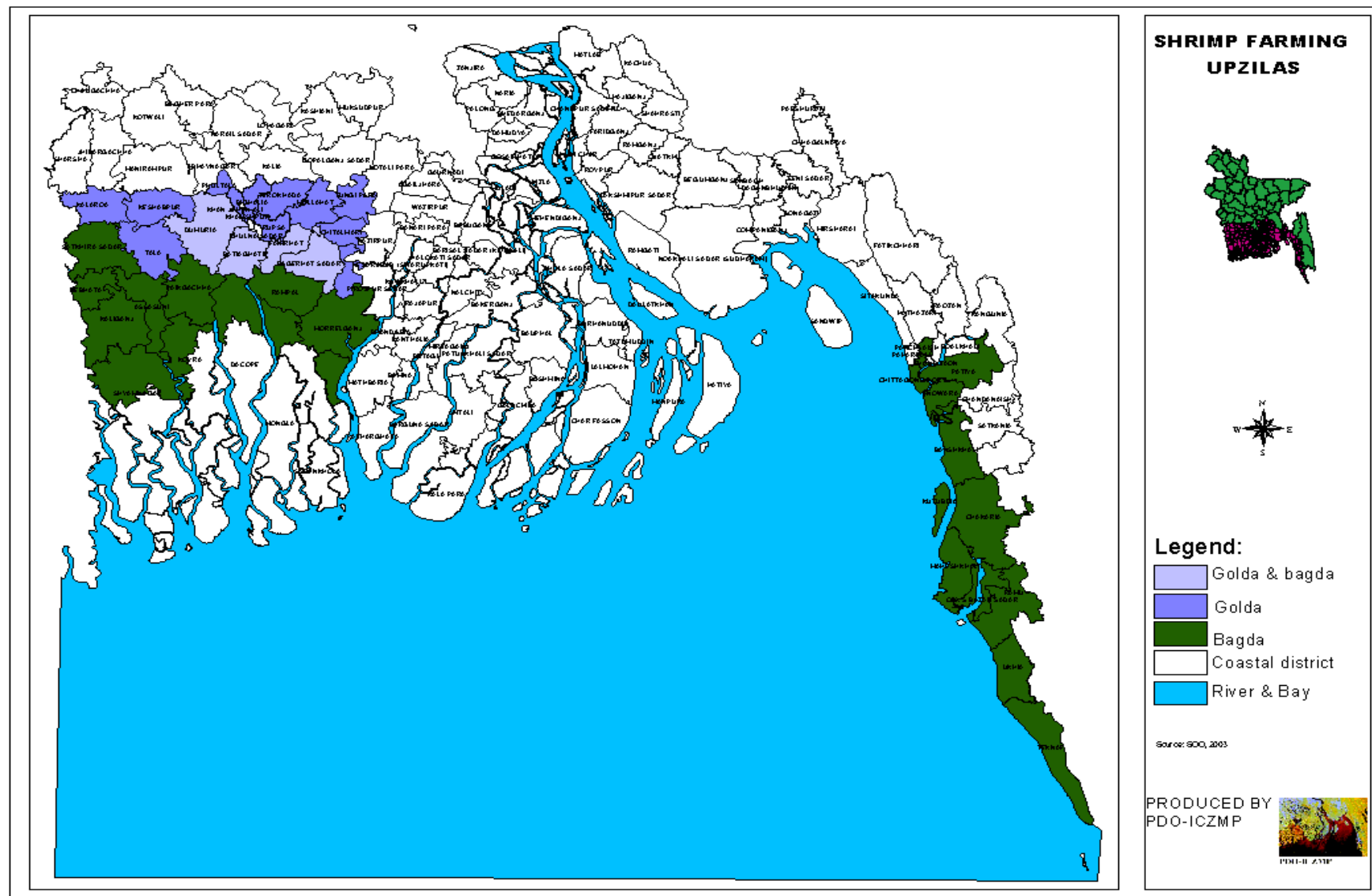
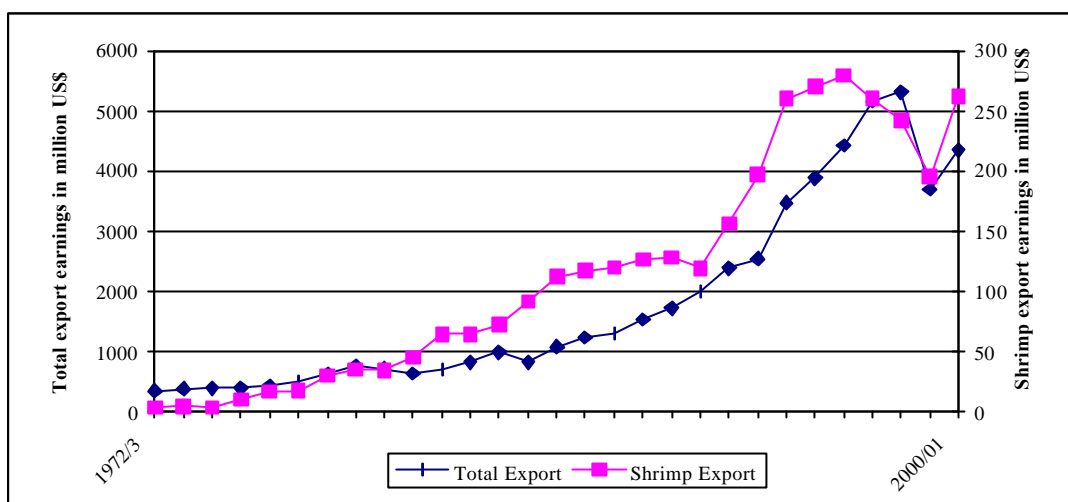


Figure 1: Map of the coastal zone and main shrimp farming upazilas.



Source: BCAS, 2001b. (after Export Promotion Bureau).

Figure 2: Value of total and shrimp export earnings for Bangladesh in the period 1972/73 - 2000/01

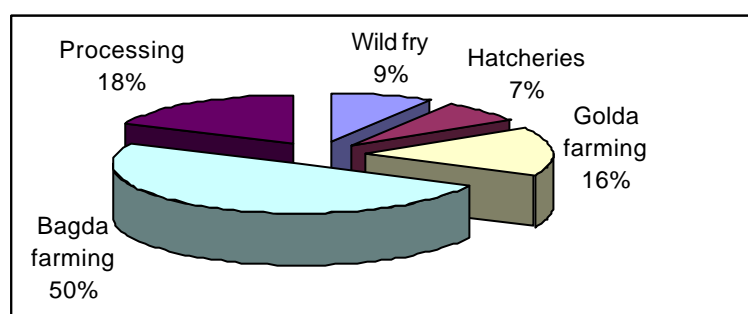


Figure 3: Break down of value added of the shrimp sector

2.2 The shrimp production chain

Figure 4 presents the main activities and their in- and outputs of the shrimp production chain, divided into four main stages.

1. *Fry collection (wild fries) and fry production (hatcheries).* Fry collection from open water occurs mainly along the Chittagong, Noakhali and Barisal/Patuakhali coasts. Hatcheries are mainly found along the Chittagong coast. Selling/collecting, transport and trading occurs through many alternative channels, dominated by middlemen (farias) and wholesalers (aratdars).
2. *Production and farming in shrimp ponds (ghers) in one or two phases (through additional nursery ponds).* As mentioned in Section 2.1, the total bagda production was twice the golda production in 2001. In that year, roughly 80% of the bagda production area and almost all golda area were located in the southwestern part of the country (Khulna, Sathkhira, Bagerhat, Jessore and Narail districts). Use of special nurseries (two-phase farming) is not widespread. Land acquisition / reclamation and water management are important activities in farming.
3. *Transport and processing.* All harvested shrimps pass agents, commissioned by the processing factories, through different routes and depots. Processing refers to de-heading and cleaning of the shrimps and subsequent freezing and packing. There is huge overcapacity: roughly one-fifth of the total available processing capacity is effectively used. Two-thirds of all these activities occur in the Khulna district (2001). Quality control in this stage is crucial.

4. *Export and marketing.* Activities are marketing and shipping. In 2001, about 30,000 tons of shrimp were exported, representing an export earning of about Tk 19,000 M (US\$ 32 M).

Sections 2.4 to 2.8 describe these stages in more detail.

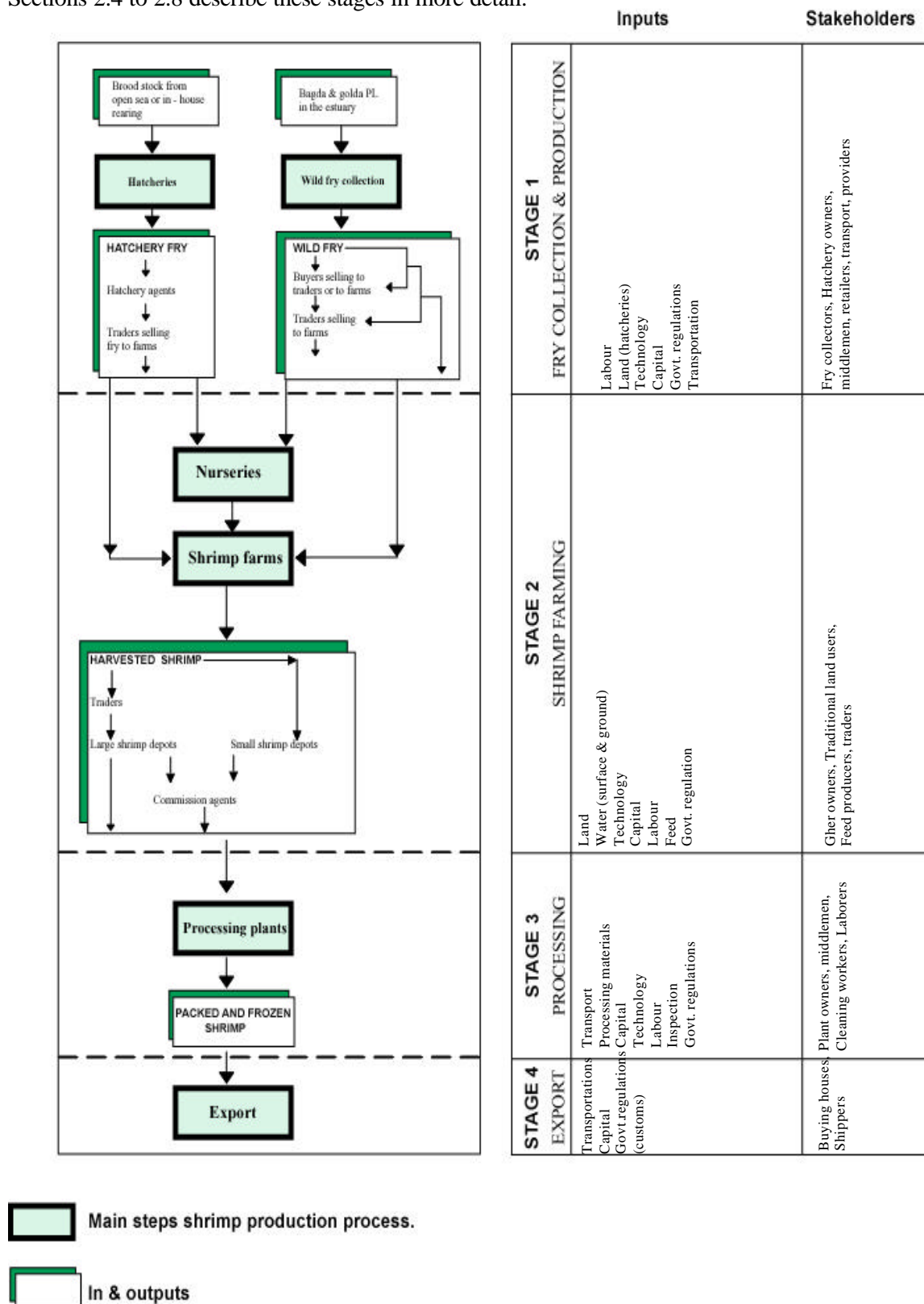


Figure 4: Shrimp production processes

2.3 The natural shrimp cycle

Figure 5 illustrates the life cycles under natural conditions of bagda and golda. The adult shrimp of both types breed and spawn in the sea but the post larvae (PL) move inland into the estuary. For the bagda shrimp this is a short intermission, moving back to the sea in the juvenile stage. Golda shrimps, however, move further inland and develop through the juvenile and adult stages in fresh water.

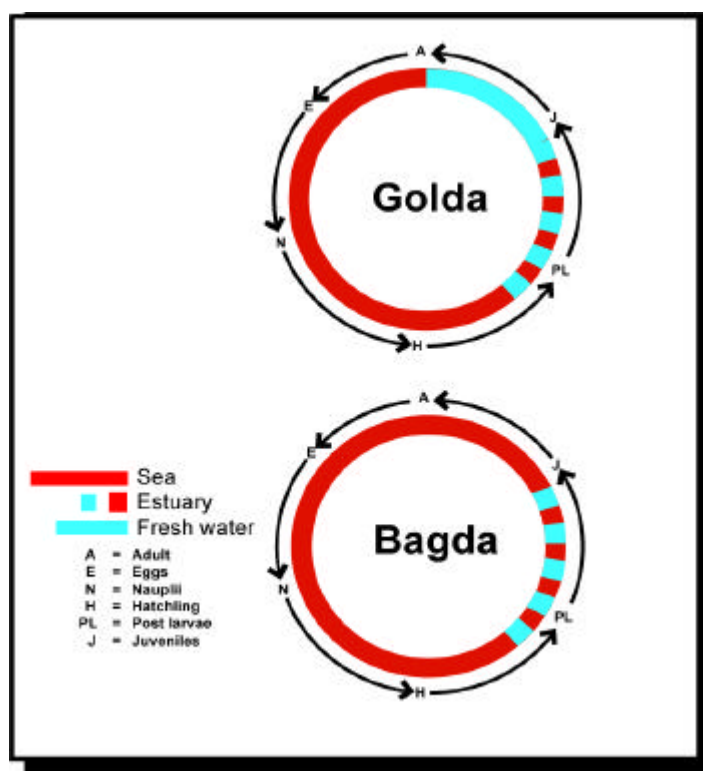


Figure 5: Schematic lifecycles of golda and bagda

In natural conditions, golda spawns 3 to 4 times in its third year before it dies. The spawning period is from April to August. Fertilized eggs take about 50 to 70 days to become juvenile, which takes place in the sea and in the estuary. Golda juveniles stay for another week or two in the estuary before moving inland into a fresh water habitat (river, beel, baor, haor, flood lands and ponds) for grazing and growing. In 18 to 24 months they become mature for reproduction; by this time they also get back into the sea.

Bagda breeds almost throughout the year from September to July and PLs are available in nature from November to August. For bagda it takes 40 to 50 days for eggs to hatch out and reach the post larval juvenile stage. As juveniles develop they settle at the bottom of shallow waters in the mouth of the estuaries. During the monsoon period, when the estuarine and coastal waters of the major rivers become fresh, these juveniles die or move back to deeper areas as they further mature to adults that spawn after 18 to 24 months. This explains their reduced availability during the monsoon in the western part of the coast (Table 2).

The life span of both bagda and golda shrimps is about 3 years; most die after one year of spawning.

2.4 Fry collection and fry production

In case of bagda, 50% of the PL is derived from fry collectors and 50% from hatcheries, while for golda, 90% of the PL is derived from wild sources and 10% from hatcheries. Wild sources are still

preferred by farmers as many believe that wild PL has a lower mortality rate: 40% as compared with 60-80% for hatchery-produced PL [Nuruzzaman, 2002].

2.4.1 Wild fry collection

Fry collection emerged as an important economic activity for coastal people in the early 1980ies [Hoq and Halder, 1995]. Wild shrimp fry collection is widely distributed along the whole coastline of Bangladesh. From Table 1, which refers to both bagda and golda catches, it can be seen that 80% of people in the southwestern and south-central regions catch only 40% of the total catch and that the average productivity per collector is seven times higher in the eastern regions. The reason may be attributed to the depletion of fries in the western region. For golda alone, the distribution is different: 60% is collected from Khulna, 35% from Comilla and Noakhali, and 5% from Cox's Bazar [Nuruzzaman, 2002]. It is further noted that shrimp culture is more intensive in the western region.

The abundance and distribution of shrimp fry also varies in time along the coast. The seasonal variation for three coastal zones is shown in Table 2.

Fry collectors use many different types of nets and gears to catch fries but most are modifications of four main gears: pull net, push net, bag net and shooting net. The level of destructiveness of each gear is influenced by the mode of operation. The behundi net (all types of set bag nets) is regarded as one of the most damaging gears in use for fry catching. The hand operated types of nets are less destructive. The capture of fry from rivers using push nets, usually operated by women and children, is not considered to be as harmful.

There is a strong contention that wild fry collection should be banned or regulated as biodiversity is being negatively impacted by the capture of fry and the destruction of by-catch.

Table 1: Distribution of shrimp fry collectors and catch per year

District	Estimated number of fry collectors	Estimated total number of fry collected (in Million)	Estimated catch per collector
Chittagong coast (Cittagong and Cox's Bazar)	61,000	1,100	18,000
Greater Noakhali (Feni, Noakhali, Laksmipur)	31,000	750	24,000
South-central (Pirojpur, Bhola, Patuakhali, Barguna)	207,000	820	4,000
Southwest (Khulna, Satkhira, Bagerhat)	133,000	270	2,000
Total	432,000	3,000	6,700

Source: [Nuruzzaman, 2002]

Table 2: Region wise availability of shrimp fry and peak collection months

Shrimp Fry	Khulna, Satkhira, Bagerhat		Barisal, Patuakhali, Bhola		Cox's Bazar	
	Availability	Peak	Availability	Peak	Availability	Peak
Bagda fry	Nov-June	Mar-April	Dec-April	Feb-Mar	Dec-Aug	Mar-April
Golda fry	April-July	May-June	Apr-June	mid Apr-mid May	na	na

Source: [Nuruzzaman, 2002]; na = not available

Table 3: Current harvesting methods for different gears

Type of gear	Areas	Unit price (Tk.)	Operated by	Existing fishing period - minutes	Recommended fishing period - minutes	Remarks
Beach set bag net	CB	500 - 550	Adult male	20 - 30	10 - 15	Destructive
River set bag net (boat operated)	KSB	10,000 - 12,000	Adult male	20 - 40	10 - 20	Very destructive
River set bag net (operated from rivers)	KSB	2,200 - 2,500	Adult male	30 - 60	15 - 25	Destructive
Hand push net	CB, KSB, BPB	150 - 200	Adult men, women, children	10 - 15	5 - 10	Less destructive
Pull net / box net	CB, KSB, BPB	250 - 300	Adult men & women	10 - 15	5 - 10	Less destructive
Boat operated push net	Satkhira	8,500 - 9,000	Adult men & women	na	na	Not destructive

Source: [Nuruzzaman, 2002]

CB= Cox's Bazar; KSB= Khulna, Satkhira, Bagerhat; BPB= Barisal, Patuakhali, Bhola; na = not available

2.4.2 Hatcheries

There are currently around 45 bagda shrimp hatcheries; 39 of them located along the Cox's Bazar beach, the remainder inland. The overall production capacity of bagda hatcheries stands at 6,000 million hatchlings per year compared to a demand of 3,000 million.

There are 34 golda hatcheries spread throughout the country, of which 15 are in the Khulna district and 9 in the Chittagong district. 15 hatcheries are reported to be in operation, producing an average of 2.7 million PL per year (2001), each factory producing an average of 13% of its total production [Banks, 2002].

Bagda grows in brackish water and hatcheries require saline water all through the hatching process and accordingly farms are located along the coast. Golda hatcheries require saline water in their initial stages but shrimp grow out in fresh water. This implies that golda hatcheries do not require proximity to the sea because the required limited amounts of seawater can be transported to the hatchery and recycled over 3 to 4 cycles of operation.

In Bangladesh, hatcheries can be classified as "small scale"² They are low cost operations, using combinations of live feeds, such as micro algae and brine shrimp nauplii (*Artemia*), and prepared diets, either purchased commercially or prepared at the hatchery.

In hatcheries, gravid (ready-to-spawn) shrimp spawn in the dark (irrelevant whether they are captured in wild or matured in the hatchery), producing between 50,000 and 1,000,000 eggs. As in nature, it takes 40 to 50 days for bagda and 50 to 70 days for golda to become PL and ready to be stocked in the farm.

The average hatchery prices for bagda and golda PL were Tk 740/1,000 and Tk 2,200/1,000 respectively. The cost of golda PL was about 3 times that of the previous year [CARE, 1999]. In

² Hatcheries come in three sizes: small, medium and large-scale. *Small scale hatcheries* often uses low density and untreated waters; they have achieved great success in Southeast Asia, particularly in Thailand, Taiwan, Indonesia, the Philippines and southern China. Most *medium-scale hatcheries* are based on a design developed in Japan and popularized by the Taiwanese. *Large-scale hatcheries* often referred to as "Galveston", "western" or "clear water" hatcheries are multimillion-dollar, high-tech facilities that produce large quantities of seed stock in a completely controlled environment.

April 2002, the price of wild golda PL was Tk 3,000/1,000 PL, which was reported to be nearly 40% higher than the 2001 price [Banks, 2002].

2.5 Production and farming

The combined production from marine and brackish water ponds and from freshwater gher is estimated to be around 43,000 tones (unprocessed weight), 76% coming from extensive aquaculture and 24% from inland farming (2001). The total area under production is estimated to be equivalent to 200,000 ha of which 170,000 ha (37,400 farms) is orientated towards the production of bagda culture, whilst the remaining 30,000 ha (105,000 farms) is orientated towards golda [Banks, 2002]. This compares with a total 52,000 ha and 3,500 ha in the mid 1980s respectively.

Almost all farms apply extensive farming practices, and use a one-phase shrimp production. See Section 2.5.3 for aspects of farm economy.

2.5.1 Bagda

There are around 37,400 bagda shrimp gher in Bangladesh, producing total of 32,800 t shrimp out of which 25,000 t is bagda and 37,400 t of finfish. The total production area was estimated in that year to be about 170,000 ha, of which about 135,000 ha were in the Khulna, Satkhira and Bagerhat districts, and 35,000 ha in the Chittagong District - Cox's Bazar [Banks, 2002].

Bagda shrimp farms are usually located inside coastal polders in a zone where the tidal range is between 1 and 2.5 meters. Ponds are surrounded by small dikes of 0.5 to 1 meter high and 0.3 to 0.6 meter wide, to retain at least a layer of 0.4 to 0.5 meter of water (as opposed to the recommended 1 meter). Water is mostly fed under gravity during high water levels through open channels with sluices, which are also used for drainage and flushing. Access to these open channels can present problems if the channels are closed, leased out or silted up. Only a small number of farms use Low Lift Pumps (LLP).

The farms are mostly rice fields converted to shrimp ponds of size varying from some 0.4 to 200 ha [Banks, 2002]. The average size for the country as a whole is 4.5 ha.³ This average has been reducing gradually with external leaseholders surrendering leases⁴ and small holders dividing large ponds into gher. Most of the farms (80%) are operated by their owners. The remaining 20% are tenant operators leasing in land from local as well as absentee owners of private shrimp land.

Shrimp farms use a one-phase or two-phase production process. In the two-phase process, juvenile shrimp are first stocked in *nursery ponds* before being transferred, several weeks later, to *grow-out ponds*. In the one-phase process nursery ponds are eliminated.

Before stocking hatchlings in either nursery or grown-out ponds, all types need acclimation. This is usually done in an improvised way at the expense of high mortality rates. In the western hemisphere, acclimation tanks are now developing that combine the acclimation and nursery processes.

Once a grow-out operation is started, it takes from three to six months to produce a crop of market-sized shrimp. As the production process is highly dependent on temperatures, the number of crops per year varies from 1 crop/year in northern China and the United States to 3 crops/year in tropical climates within 10 degrees of the equator. In Bangladesh only one crop is produced, the main reason being the lack of saline water during part of the year.

³ Most likely this number refers to the year 2001.

⁴ Historically, investment was discouraged in larger gher because leases were short term (1-3 years). [Karim and Stellwagen, 1998].

Grow-out operations come in many shapes and sizes. They are classified by overall management (stocking density, feed, water exchange and intensity of care, etc., and called extensive, semi-intensive, intensive and super-intensive, as densities increase from lowest (25,000 PL/ha) to highest (300,000 PL/ha). As density increases: farms get smaller; technology gets more sophisticated; capital costs go up; and production per unit of space increases.

Typically, *extensive shrimp farming* is conducted in the tropics, in low-lying impoundments (ranging in size from a few hectares to over a hundred hectares) along bays and tidal rivers, often in conjunction with herbivorous fish. *Semi-intensive shrimp farming* is usually conducted above the high tide line, in carefully laid out ponds of 2 to 30 hectares and applying feeding and pumping. *Intensive shrimp farming* uses small enclosures of 0.1 to 1.5 hectares, in combination with round-the-clock management, heavy feeding, waste removal and aeration. *Super-intensive shrimp farming* takes even greater control of the environment and can produce yields of 20,000 to 100,000 kg/ha of shrimps per year.

Construction costs of intensive shrimp farms range from \$25,000 to \$250,000 per hectare. Under conditions of year-round production in tropical climates, yields are obtained of 5,000 to 20,000 kg/ha/yr (head-on). Production costs range from \$4.00 to \$8.00 per kilogram of live shrimp. Intensive farming frequently causes environmental problems.⁵

Farm management practices in Bangladesh are of two types: extensive and improved extensive culture system. There are presently no semi-intensive farms in operation. Total stocking density varies from about 10,000 to 20,000 PL per ha, averaging 1.6 PL/m² [FFP, 2002]. The majority of the farmers interviewed in the FFP survey (2001) stocked PL directly to the grow-out pond without any acclimation and nursing. This, along with high stocking ratios, results in very high mortality rates of, in some cases, more than 80%.

Many of the farmers start stocking little by little from the wild source during the winter months from November to February. After mid February, when the weather becomes warmer, hatchery PL is also used and the willingness to pay a premium for wild fry diminishes.

Shrimp farmers usually use very little input for their shrimp farming. The FFP sample survey (2001) results suggest that 64% of the farmers use a small amount of pre-stocking inputs while 41% of them use some post-stocking input. Among the inputs, lime, urea, TSP (mentioned by a minority of farmers), cow dung, rice or wheat bran, fishmeal and oil cake are used [FFP, 2002].

Most farmers use screens at the water inlets but these are largely ineffective with significant amount of predators like sea bass, bhetki, bele and tengra.

The shrimps farms in coastal areas, particularly in the Cox's Bazaar region are subject to large variations in temperature (20-35°C). The impact of this is significant, given the shallow water depths. Temperatures are highest in late April and May.

Shrimp are harvested during the full moon: in the evenings and mornings. The shrimp caught in the evening are landed and laid on the ground until the second harvest is taken in the morning. Ice is seldomly used and the shrimp are taken to the depots in bamboo baskets, or occasionally in insulated boxes.

Bagda takes 3 months (Jan/Feb to March/April) to be ready to harvest. Yields vary from place to place. [Nuruzzaman, 2002] reports highest yields in Satkhira of 147 kg/ha and lowest in Cox's Bazar 76 kg/ha. In Khulna yields were reported of about 100 kg/ha. DoF reports much higher yields, ranging from 159 (Khulna) to 216 kg/ha (Cox' Bazar).

⁵ Information from website: www.ctu.edu.vn/colleges/aquaculture/cd_shrimp/product/desint.htm

2.5.2 Golda

Golda farming has increased rapidly in recent years. The [FFP, 2002] estimates that about 30,000 ha are currently under golda farming (ranging from 0.15 ha to 2 ha).

Golda shrimps are cultured in ponds (about 25% of all golda farms) and in gher (about 75% of all golda farms). The average size of these golda farms is 0.29 ha [Ahmed, 2001] including both ponds and gher. The ponds cover small areas and are constructed on crop land or in beels (e.g., Beel Dakatia) and are usually filled with rain water during the monsoon. Small dikes may be provided to accumulate the recommended 1 m of water. Gher on the other hand are bigger areas in flooded lands, using natural depressions, and are usually embanked. Gher could be single owned or multiple owned (gonogher).

Integrated farming of prawn with rice, fish and vegetables in a modified rice field is spreading, particularly among small-scale farmers. Integrated gher farming provides a year round supply of crops for family subsistence, which is supplemented with a valuable cash crop (golda). Improvements in low costs supplementary feed and reduced stocking rates and credit costs have made gher farming more accessible to poor farmers.

Most of the farmers stock PL directly at a density of 10,000 - 20,000 PL/ha without rearing them in nursery systems. This is 1 to 2 PL/m².

Golda takes 4 to 5 months (June/July to Nov/Dec) to be ready to harvest. Production is equal to 80-108 kg/gher [CARE, 1999] - averaging 336 kg/ha [Banks, 2002].

After harvesting, the prawns are cleaned first using gher water and subsequently tube well water. They are kept in aluminium pots with clean water or bamboo baskets until they are de-headed and sold. Unlike bagda, golda shrimps are always de-headed before selling as the heads form part of the diet of farm households. Ice is rarely applied.

2.5.3 Farm economics

In 2001, sales from bagda farms was estimated at about Tk 13.9 million. This included Tk. 11.4 million for 32,800 t of shrimp (out of which 25,000 t bagda and 2,000 t golda) and 2.5 million for white fish. In the same year sales from golda gher was estimated at about Tk 3.3 million. This referred to Tk 2.5 million for 10,000 t of golda and Tk 0.8 million for white fish [Banks, 2002].

Table 4 estimates give an impression of the production revenues and costs of bagda and golda farming. It appears that turn over per ha of golda farming is almost twice that of bagda farming, while profit is roughly the same. Input cost for golda farming is substantially higher (fry and other inputs).

Table 4: Estimates of bagda and golda farm economics⁶

Types	Gross income per ha	Fry cost per ha	Land rent per ha	Labour per ha	Other inputs (feed, fertilizers) per ha	Profit per ha
Bagda	81,519	16,733	18,765	7,557	898	37,567
		25%	25%	8%	2%	40%
Golda	110,000 (20,000 finfish)	31,200	15,000	5,000	30,500	28,300
		28%	14%	5%	27%	26%

Source: estimated from [Banks, 2002] and [BCAS, 2001b].

⁶ Farm practices and yields are given in Section 2.5.1.

Land rent is often not paid for and should be considered an opportunity cost. A total of 50% of bagda fries come from wild sources and 50% from hatchery. On the other hand, 10% of golda fries come from hatchery while 90% come from wild.

Labor costs include earth works (for maintenance but not for construction), guarding, pond cleaning, harvesting and preliminary processing, as well as for various supporting or unspecified activities such as cooking. Men do the majority of the work, though women dominate the initial processing (sorting and grading for local market) of the shrimp. It is noted that 50% of all paid employment is in guarding and to avoid conflicts of loyalty, men are frequently brought in from other localities to do this.

Input costs include feed and fertilizer, such as lime, cow dung, urea, TSP, oil cake (khail) and other commercial shrimp food such as fish meal. General practice is that bagda farmers, in contrast to golda farmers, do not apply feed or fertilizers.

Water was free for most bagda farmers or not recorded as a cost (Cox's Bazar).

2.6 Transport and processing

Once harvested, the flow of shrimps from gher to factory takes place within 24-36 hours. The post-harvest trade flow goes from farmer to sub-depot to depot to agent to factory (allowing for specific variations). All trade ultimately feeds through the agents who buy the entire product pre-sale to the factory.

Large depots may employ up to 25 farias (intermediaries) each purchasing directly from the farm gate. Farias generally trade with the smaller bagda farmers and all small-scale golda producers. Some larger scale farmers are able to by-pass the farias and supply direct to the 'depot' or even to the agents (estimated to be around 10% of the total). There are no direct links between farmers and the processing factories (less than 1%). Processors provide a commission to agents who compete for supplies at the depots. The agents subsequently use this finance as capital for lending (through the faria network to producers). One agent may deal with several factories. They exert influence at both ends of the scale. The commission agents largely fix the prices.

Processing includes de-heading (bagda) and cleaning of the shrimps, freezing and packing. There are 124 processing factories in Bangladesh with a capacity for processing of 825 t per day. Of these, 35 are presently operational in Khulna (mostly located along the Rupsha River), 38 are operational in the Chittagong district and 51 plants have either closed down or are awaiting approval⁷ for a quality inspection license. Khulna accounts for around 60-75 % of the total production capacity. Only around 20% of the total factory capacity is utilized.

Quality control is a crucial element at this stage. DoF has recently amended the Fish Inspection and Quality Control Act to incorporate Hazard Analysis Critical Control Point (HACCP) standards and principles and EU requirements. Moreover, the Upazila Fisheries Officers have been instructed officially to enforce the Fish Inspection and Quality Control Act under which they can visit shrimp depots and take action on defaulters.

License allocation is directly linked to HACCP. All plants are subject to a quality audit by DoF. A significant number of plants have failed to receive approval. The increased rigidity in inspection follows the ban on imports of shrimp into the EU in 1997.

⁷ Interviews with some processors illustrated that despite apparent closure, some of these factories could be opened when peak international orders arise. Production would be on a sub-contracted basis to licensed processors.

2.7 Export and marketing

Values of total and shrimp exports of Bangladesh (total output in millions of US\$) are given in Figure 2 [BCAS, 2001b], showing that shrimp export accounts for more than 5% of the total export earnings (see also Section 2.1).

Almost all of bagda and golda shrimp produced in Bangladesh are exported [BCAS, 2001b]. As these shrimps are produced by the extensive culture method without any use of chemicals such as antibiotics, they are of high quality in terms of size, color and muscle texture and highly in demand on the international market. However, due to lack of proper post-harvest care and quality control, major buyers from the EU stopped importing shrimp from Bangladesh in 1997. Drastic measures to maintain quality in compliance with HACCP standard helped to regain the international market by 2000.

USA, Japan and the EU are the main buyers of Bangladeshi shrimp. Over the past 6 years (1995 – 2000), the value of their total shrimp imports was quite stable at US\$ 10 billion. Worldwide, however, the consumption of shrimp, including these giants, is steadily increasing. The Republic of Korea, Singapore and Hong Kong emerged as new shrimp markets. [INFOFISH, 2001] expected further expansion of the US and European shrimp market following the outbreaks of foot and mouth disease and mad cow disease.

The average annual price increase of shrimp from 1991 to 1998 was about 13% while the total price increase in 10 years was about 140 percent. In 2001-2002, Bangladesh achieved its ever-highest export earnings from the fisheries sector (Tk 18,851M or US\$ 325M) by exporting almost 30,000 tons of shrimps, which constituted 90% of the frozen fish export.

The Export Promotion Bureau deals with the processes of finding buyers for the processed shrimps and arranging for the required GoB export licenses and GoB quality certificates (required by buyers). This process is done through private companies or individuals. Processing plants may export directly or decide to go through specialized exporters or exporting companies. Quality certificates are issued by DoF. There are three laboratories (Khulna, Dhaka and Chittagong) to test the quality (intending to comply with HACCP standards) and issue certificates.

Most processors and exporters are organized in associations that look after their common interests and represent them in different forums. The Bangladesh Frozen Food Exporters Association and the Shrimp Hatcheries Association are the most important ones with lot of influence in the formulation of government policies.

2.8 Trends

This section introduces a brief summary of the trends that seem important in assessing the present situation of the shrimp sector and the development of management strategies for its further development. Four areas are distinguished: markets; environment; technology; and government.

Markets

Observed trends are contradictory for Bangladesh.

- Increase of demand and price of shrimp. New markets seem to open in Southeast Asia, while the demand in Europe might continue to increase in the wake of recent cattle epidemics (foot and mouth and mad cow diseases). Price developments of the last ten years may continue (13% per annum).
- Tightening of international standards puts Bangladesh in a vulnerable position because of its difficulties to establish a reliable and trustworthy quality control.

- Increasing consumer awareness and demand for an “environmentally sustainable and socially acceptable” produce. Present production methodology in Bangladesh will not meet international criteria, but the extensive production systems practiced in Bangladesh might turn this demand development into the country’s favor when well managed by its government.

Impacts on the environment

Environmental impacts relate to (a) depletion of the raw material (mother shrimps, fries and feed), and, (b) impacts of farming activities.

- Depletion in population of mother shrimp: unrestricted trawling in shrimp breeding grounds. In last two years, the number of trawlers has increased from 53 to 67. In the first year catches increased but decreased in the following year. However, to bring a balance in this respect, the DoF has emphasized on the use of Code of Conduct prepared by ATDPPII, developed a fishing management plan for brood stock collection, closing trawler operation for certain parts of the year (mid June – mid February), restricted ban on fry catching (DoF, 2002b).
- Decline in fry population: In many areas, the fry stock is decreasing due to intense fishing for fries. For example, in the Chokoria area, fry has almost disappeared. Similarly, fry catchers have diminished considerably near Cox’s Bazar.
- Decline in snails (feed): snails were widely used as natural feed in shrimp ghers resulting in tremendous decline in snail population. Indiscriminate throwing of fries of fish species other than the shrimp has depleted the population of other fish species.
- Expansion of shrimp farms has led to a loss of mangrove forest-land and a decline in biodiversity, while agricultural lands became saline when paddy fields were converted into shrimp fields. In addition, poor peoples’ access to khas land has declined significantly. These changes had serious adverse socio-economic effects such as: loss of grazing lands; loss of fuel wood supplies; reduced availability and access to drinking water; reduced production from homestead gardens.

Technologic development

As mentioned, the Bangladesh shrimp sector practices an extensive production system and still uses wild fries as the main resource. There seems room for technological improvements, which should be controlled to keep the high quality shrimp Bangladesh is now producing.

- A further shift is expected from wild fry to hatchery fry production.
- Farm sizes became smaller. It has been observed that smaller farms were more productive than larger one. Influential outsiders in shrimp farming have almost moved out and land owners themselves are mostly operating their own farms.
- Alternate shrimp-rice farming is increasing rapidly.
- Cooperative shrimp farming are getting more popular day by day.
- Improving farm practices. Extension efforts are growing and several initiatives will continue to transfer basic techniques to farmers, such as: predator control; use of lime and fertilizer; stocking of PL; nursing PL before grow-out; and water management. This will all support increased efficiencies and smaller farm sizes.
- Most of the shrimp processing plants have undergone substantial improvements recently to comply with the HACCP standards and principles. The shrimp processors have already started to improve and diversify their processing methods.

- Intensive shrimp culture will lead to: increased use of antibiotics with consequent adverse impacts on natural species and biodiversity; enhancing the risk of disease as happened in the early nineties; reducing the enabling environment-friendliness of shrimp culture; and increasing further concern for quality and hygiene while social justification will be questioned.
- Rapid expansion of golda cultivation is expected in the coming years. The DANIDA supported golda hatchery in Noakhali shall be producing this season (April 2003) with a capacity of 10 million PL per year, while the extension service of golda cultivation proceeds well. Farmers seem to have accepted golda cultivation and an estimated 40,000 ha of single cropland is expected to produce golda with rice during the shrimp season. DANIDA has also initiated the promotion of golda cultivation in the Patuakhali and Barguna districts.

Government and management

The government attaches high priority to shrimp culture and shrimp export and has recently finished a Shrimp Action Plan, a six month review (April – September 2002) in partnership between DFID and DoF through FFP. Government intentions as expressed in policies might be indicative for long-term changes. Reference is made to Section 4.1, which summarizes the most important policies. Main trends are summarized below.

- The Bangladesh Government continues to redefine its role and intends to limit its involvement in production-oriented processes to monitoring and control (privatization).
- Appropriate seal of quality for the shrimp sector products are receiving active considerations from the GoB, private sector and donors. ATDP projects on developing the seal of quality for the shrimp sector and ensuring the backward linkages to the seal of quality is ongoing and expected to develop a frame by 2004.
- Mainly driven by donors, poverty alleviation is getting more and more attention in government actions. For the shrimp sector this could imply more attention for mechanisms to improve equity.
- Effective enforcement cannot be expected in the near future.
- It is not realistic to expect that adequate land management and zoning will be implemented in the near future as an important tool for management.
- Bangladesh Government is providing significant assistance to hatchery and processing activities of the shrimp sector [Banks, 2002]. Reference is made to Section 5.2.

3 LIVELIHOOD ANALYSIS

3.1 Context

Shrimp farming is an important source of livelihood for a significant portion of the people in the coastal zone. Once considered as a low-grade food item in the past, mainly consumed by the poorer sections of the community, *eecha* (shrimp) has been elevated to a higher status with the opening of the world market for the product since the mid-1970s. This is one of the livelihood activities heavily dependent on pull factors of the global market.

3.2 Employment

Total employment in the shrimp production sector (excluding marine capture fisheries) is often estimated at about 840,000 persons [Frankenberger, 2002]. [Banks, 2002] gives an elaborated table amounting to about 741,000 employed persons. Table 5 presents a summary with the mere purpose to show the distribution of employment for different livelihood groups in the total shrimp production chain.

Table 5: Distribution of employment for different livelihood groups

Livelihood groups	Labour	% of total HH income
Wild fry collectors	444,000	41
Wild fry faria	5,176	49
Wild fry aratdar		62
Traders/faria selling wild fry to farms	1,791	82
Hatcheries	1,845	
Hatchery agents		
Traders/faria selling hatchery to farms		63
Shrimp farms/producer	266,485	52
Shrimp traders/faria	5,293	65
Small shrimp depots	4,349	80
Large shrimp depots		90
Processing factories	9,780	
Commission agents	500	80
Feed factories	230	
Transporters		
Total	741,449	66

Source: [Banks, 2002]

Accounting for the employment figures in Table 5, although the figures may be debated, it can be concluded that the largest employment group within the sector is the wild post larvae collectors (60% of the total sector employment) and the second largest group is the shrimp farmers (35%). It can also be concluded that for these livelihood groups, income through the shrimp activities account for about 50% of household income.

Bangladesh currently accounts for 2.5 percent of the global shrimp production. The shrimp sector has a share of 14 percent in pisciculture farms (holdings) and 4 percent in total agricultural employment (all sorts of land-based self-employment plus wage employment) in the coastal zone [Frankenberger, 2002: 2]; [BBS, 1999]. The sector annually generates 16 million person days of wage labor, 85% for bagda and 15% for golda [BCAS, 2001b: 27].⁸

⁸ 80 person day/ha; 170,000 ha bagda farm, 30,000 ha golda farm.

Man-days per hectare average 106, 93 are part time of which 72 is allocated to guarding, 17 to preparation and 4 to operation. Satkhira represents the greater level of intensity (171 man days), followed by Khulna, 121, Cox's Bazaar, 119 and Bagerhat, 49.

3.3 Major livelihood groups

In the whole chain of bagda culture, wild fry collectors are the major livelihood group in terms of number, followed by farmers and persons involved in processing/services. Their share of total earnings is 9%, 76%, and 15% respectively [BCAS, 2001b: 41-42].⁹

3.4 Farmers

Demographic composition

Shrimp farming is male-dominated activity. Seven percent of the farmers (bagda) are women [BCAS, 2001b: 42].

Socio-economic composition

Social stratification in shrimp farming is relatively less egalitarian compared to farmers in the overall agricultural sector in terms of land owned/controlled. The proportion of land owned by large farmers in the coastal zone is 2 percent and together they own 13 percent of land, while the proportion of large farmers in the shrimp sector is 4 percent owning 42 percent of land in shrimp villages [BCAS, 2001b]; [BBS, 1999].

Employment

Estimated number of shrimp farms is about 142,400. The majority of these are golda (105,000; 73%) and the rest 37,400 are bagda (27%). 166,500 persons earn at least part of their income from Bagda farming, average employment per farm being 4.5. Total number of shrimp-farm related employment is estimated to be about 840,000 persons [Frankenberger, 2002: 2]. Wage employment in shrimp farming is estimated at 79 person days per ha i.e about 15,800,000 person-days and accounts for 28% of total employment in shrimp farming.

Vulnerabilities

Farmers (bagda) substantially depend on the shrimp sector for livelihood deriving 52 percent of their household income [BCAS, 2001b]. Any interruption or dislocation in the farming cycle and in backward/forward linkage activities is likely to affect them significantly.

Shrimp farmers are vulnerable to several factors. Among these are natural disasters (floods and cyclones), market fluctuations (erratic price in the global market), market demand (often determined by quality conditions difficult to fulfill), and efficiency aspects (conditioned by enabling infrastructure like finance, storage and transportation).

⁹ Bagda: total employment 308,127 persons; total wage/income 7,348.6 million Tk)

3.5 Fry collectors

Demographic composition

Fry collection is usually a family operation participated by men, women and children. Roughly 30 percent of the fry collectors are women. The average age of a child fry collector is 12 (10.6 for girls). A large number of them are dropouts from schools (74%).

Fry collectors are from both Muslim and Hindu communities. In Cox's Bazar, members of the Rakhaine ethnic community are also involved in fry collection [Frankenberger, 2002: xi-xiii].

Employment

Estimated number of fry collectors in the coastal zone is 432,000. Among them 120,000 (27%) are engaged in bagda fry collection [BCAS, 2001b: 4]. Among the bagda fry collectors, 39% are women [BCAS, 2001b: 41]. The district of Khulna has the highest concentration, followed by Satkhira, Cox's Bazar and Bagerhat. Figures on employment vary widely.

[Frankenberger, 2002] reports that the number of fry collectors dropped dramatically between 2001 and 2002 from about 400,000 to about 300,000, as a result of the "marked decline in PL availability, due to environmental factors and excess harvesting".

In the Khulna region, men fry collectors can earn Tk 100-500 per day while women collectors can earn Tk 50-100. [Frankenberger, 2002] after William's Khulna Trip Report, June, 2002.

The cycle of fry collection differs from region to region (Table 2). Bagda fry is mainly available in the dry season, while Golda fry is collected round the year, though the peak season is April-May. Fixed bag nets are mainly used for collecting fry. The average amount of time spent with the nets is 6-10 hours.

Vulnerabilities

Fry collectors (bagda) substantially depend on the shrimp sector for livelihood deriving 41 percent of their household income. [BCAS, 2001b: 41]. Employment in the income sense is modest to high for many fry collectors. The average income (annual) of a fry collector ranges from Tk 955 in Khulna to Tk 27,626 in Lakshmipur, with an overall average of Tk 6,000. The number of fry collectors is high in some districts, particularly in Patuakhali (25%) and Barguna (15%), which is indicative of the dependence of poor people on this particular activity. Although shrimp farms are more concentrated in the greater Khulna district, there are fewer fry collectors from that region. Opportunity (or lack of opportunity) for gainful employment in other activities is plausible explanation for this employment pattern. A large number of fry collectors will be adversely affected as a result of an effective ban on wild fry collection. This may affect women fry collectors more as they have fewer options for remunerative employment.

4 POLICIES, LAWS AND INSTITUTIONAL ARRANGEMENTS

This chapter presents a brief overview of the mechanisms and instruments the GoB has at its disposal for managing the shrimp sector and a first analysis how they are used. In three subsequent sections (4.1 to 4.3), the policy and legal regimes and the institutional arrangements are discussed, while in a final section (4.4) their joint functioning is reviewed in relation to typical GoB management tasks. Appendices A to C give details on the policy regime, the legal regime and the institutional arrangements, respectively.

4.1 Policy regime

The first and formal policy on shrimp management is the *Shrimp Mohal (Estate) Management Policy* of 1992, issued by the Ministry of Land, dated 30 March, 1992. Earlier efforts on shrimp culture regulation appear to be:

- ◇ the Shrimp Cultivation Regulation Committees set up in 1986 at division, district and upazila levels in the Khulna region, which functioned till 1 January 1998¹⁰; and
- ◇ the Cabinet Division Sub-committee on Shrimp Cultivation Management and Export, headed by the Industry Minister and established by a notification issued by the Cabinet Division on 19 January 1991, which functioned till 3 September 1998.

The Shrimp Mohal Management Policy emphasizes the need for an appropriate and just land management policy for shrimp culture. It aims not only at production increase but also at the alleviation of the socio-economic conditions of the people. It envisages that land suitable for shrimp cultivation will be declared as Shrimp Mohal, no distinction has been made between government (khas) and private lands.

The main policy dealing with shrimp is the *National Fish Policy of 1998*, in which the shrimp sub-sector has been addressed with priority. The policy emphasizes that amongst the non-traditional export items of Bangladesh, fish and fisheries products rank first in terms of foreign currency earnings, of which shrimp alone constitutes 86 percent. The policy formulates a series of guidelines (Clause 7), mainly to increase the shrimp production and export (see Appendix A), which in general are considered adequate. Emphasis is given in these guidelines on such issues as: coordination of shrimp and paddy cultivation; advanced traditional modes of shrimp production; role of the private sector; hatchery technology; wild fry collection; infrastructure; and hygiene and quality control. Emphasis is also given to management of the sector, including the expansion of the Central Shrimp Cell of the Ministry of Fisheries and Livestock to field levels, and coordination with the ministries of Environment and Forest.

In addition, a number of sector policies and special Cabinet Division Notifications address issues relevant to shrimp cultivation. They are summarized in Table 6. None of the policies refer to shrimp cultivation explicitly, except the Export Policy 1997-2002, emphasizing the export aspects of shrimps.

However, there are inconsistencies on some issues in different sector policies, which are subject to confusion and can be abused. Table 7 gives an overview of some of these issues.

¹⁰ These Committees were dissolved by Clause 2 of the Notification dated 1 January 1998 issued by the Cabinet Division.

Table 6: Summary overview of shrimp related policies and Cabinet decisions

Policy	Relevance
Shrimp Mohal Management Policy, 1992	Identification and declaration of shrimp areas
The National Fish Policy 1998	Details of government policies on relevant shrimp culture and livelihood issues
National Water Policy, 1998	Addressing the needs of all sectoral water users against an uni-sectoral approach
National Environment Policy, 1995	Protection of the environment
Export Policy, 1997-2002	Promotion of export and consequent promotion of shrimp culture
National Land Use Policy, 2001	Allocation of land for shrimp culture and land zoning
Agriculture Policy, 1999	No reference to sustainability of environment and other water uses including fish and shrimp
Industrial Policy, 1999	Declaring frozen food industry a “trust sector”

Table 7: Shrimp related issues for harmonization of different sector policies

Relevant policies	Issue for harmonization
National Environment Policy, 1995 and Shrimp Mohal Management Policy, 1992	According to the National Environment Policy, 1995, the salinity in land can not be increased. The Shrimp Mohal Management Policy declares suitable land for shrimp cultivation as shrimp mohal, thereby challenging the policy to not increase salinity in land.
Export Policy, 1997-2002 and National Environment Policy, 1995	An expansion of traditional/semi-intensive cultivation of shrimp, as targeted in the Export Policy, could lead to an increase in salinity, which is not allowed under the provisions laid down in the Environment Policy.
National Land Use Policy, 2001 and National Fish Policy, 1998	Harmonization needed in zoning in the coastal areas on the basis of land topography, tidal inundation, water salinity, soil quality and other environmental factors, with the active participation of local people as promoted by the National Land Use Policy.
Agriculture Policy, 1999 and National Water Policy, 1998	Non-inclusion in the Agriculture Policy, 1999, of the provision to address the environmental issues against impact of the use of agro-chemicals on soil, water bodies, fisheries and overall biodiversity. Emphasis on single sector (agriculture) use of water in Agricultural Policy, while, the National Water Policy strongly recommends the integration of uses of water taking into consideration the interest of all users.

Overall, it can be concluded that there are no policy constraints to address such issues as: improvement of livelihoods; protection of wild broods, environment and bio-diversity; certification for hatcheries and quality control; and technical and financial support to farmers. The problem seems to be more a lack of efforts to make use of the opportunities created by the policy frameworks and to make these policies work through, e.g., framing laws and regulations and formulating strategic and action plans.

4.2 Legal regime

There is no law¹¹ in Bangladesh specifically dealing with the cultivation, farming, management, marketing, processing, etc., of shrimp. The only law that has direct bearing on shrimp is the Shrimp Cultivation Tax Act, 1992, which is revenue-collection oriented. This does not mean that shrimp is

¹¹ That is Act, Ordinance and Presidential Order.

out of the domain of law, i.e., that there wouldn't be a legal regime on shrimp. The law of the land on fish and fisheries in general applies to shrimp.

Whatever may be the biological entity of shrimp, so far as the law is concerned: shrimp is a fish. The Protection and Conservation of Fish Act, 1950, did not include shrimp or prawn in its definition of fish but it was deemed to have been included. However, the said law was amended and the Protection and Conservation of Fish (Amendment) Ordinance, 1982, clearly spells out that fish includes shrimp and prawn. The laws that have direct nexus and bearing on shrimp culture are presented in Table 8 (see Appendix B for details).

The following aspects of the legal regime merit emphasis.

- The Conservation and Protection of Fish Act, 1950, is oriented towards protection and conservation of fish and not towards the production or the management of fish resources. However, one may question whether there is a necessity for having a law on production and management of shrimp, or this should be left to the producers. This law is applicable to both private and government sectors.
- The Private Fisheries Protection Act, 1899, is to protect the right of fishery (land) owners against unauthorized fishing and is punishment oriented, while the Government Fisheries Protection Ordinance of 1959 is to protect the fisheries owned by government from unauthorized use and is also punishment oriented. Both these laws have relevance to shrimp culture, although not mentioned specifically. The Private Fisheries Protection Act, 1899, has an important bearing on the protection of the rights of the landowners who don't like to lend their land for shrimp farming, but is in conflict with the Shrimp Mohal Policy which authorizes the government to declare an area as shrimp jolmohal.
- The Marine Fisheries Ordinance, 1983, has an important bearing on the protection of mother shrimp. In pursuance to section 28 of the Ordinance, the government has declared (on October 29, 2000) four places in the territorial waters of Bangladesh in the Bay of Bengal to be marine reserve areas with a view to ensure safe breeding of fish and shrimp.
- The Fish and Fish Products (Inspection and Quality Control), Ordinance, 1983, prohibits the establishment and operation of fish processing and fish packing plants without obtaining license from the government, and provides provisions for inspection and quality control of fish and fish products. In pursuance to Section 15 of the Ordinance, the government has framed rules such as the Fish and Fish Product - Inspection and Quality Control Rules, 1997.
- Implementation of the laws is of utmost importance and priority for quality control, rather than promulgation of new laws for the development and management of the shrimp sub-sector.

Table 8: Summary overview of shrimp related laws and their relevance and harmonization issues

Relevant laws	Relevance and issue for harmonization	Implementing agency
Private Fisheries Protection Act, 1899	Oldest fish law. Protection of private fisheries and the rights of landowners who don't like to lend their land for shrimp farming.	MoFL, DoF
Forest Act, 1927	Allocation of fish management responsibilities in mangrove areas to the Forest Department (FD). This implies duplication of the tasks and responsibilities of DoF, which special relevance to fish management in the Sundarbans.	MoEF, DoF
The Protection and Conservation of Fish Act, 1950	Protection and conservation of fish and fisheries, allowing the government to frame rules.	MoFL, DoF
The Government Fisheries Protection Ordinance, 1959	Protection of government khas water bodies against unauthorized fishing.	MoFL, DoF
The Fish and Fish Products (Inspection and Quality Control) Ordinance, 1983	Empowerment of government for inspection and quality control through separate rules, such as the <i>Fish and Fish Products (Inspection and Quality Control) Rules, 1997</i> . This rule empowers officers and sets licensing systems for processing and export.	MoFL, DoF
Marine Fisheries Ordinance, 1983 (MFO)	Regulation of licensing, gears and areas of fishing. Relevant for protection of mother shrimp. Jurisdiction is limited from the 18.29m depth line to the limit of territorial waters. This thus excludes shallow waters where fry catching occurs. The ordinance prescribes mesh sizes for different gears, defines the need for fishing licenses when not registered under any other law (as most ships are registered with the Dept. of Shipping, this rule is by-passed) and facilitates the declaration of marine reserve area.	MoFL, DoF
The Protection and Conservation of Fish Rules, 1985 Amended rule 8(1A), 2000	Ban on catching fry or post larvae of fish shrimp and prawns. Last amendment in 2000 when rule 8(1A) was added which conflicts with National Fish Policy, 1998. Rules conflict with the Embankment and Drainage Act, 1952, that needs to modify the provision that "construction of bunds, weirs, dams and embankments in or across the rivers, canals, khals or beels are prohibited in general and can only be constructed for irrigation, flood control or drainage" – to include the purpose of "water supply in shrimp gher".	MoFL, DoF MoEF
The Shrimp Cultivation Tax Act, 1992	Establishes rules for tax on land used for shrimp cultivation with Water Development Board in an appraising role for fixing tax rates.	BWDB
The Environment Conservation Act, 1995 and Elaborated Environment Protection Rules, 1995	Provision for environmental clearance. Revision is needed to avoid that ship breaking industry is cleared under the guise of re-rolling mills.	MoEF, DoE
Fish and Fish Products (Inspection and Quality Control) Rules, 1997	Lays down detailed procedures for inspection and quality control of fish and fish products during transportation, processing and export as well as empowers officers to implement the rules.	MoFL, DoF
Registration of shrimp gher/farm, 1998	Keeping records of shrimp farms.	Div/Dt/UZ Committees-1998.

4.3 Institutional arrangements

4.3.1 An overview

Table 9 gives an overview of the various committees and their working periods as they were formed or proposed at different times by the government.

Table 9: Overview of government committees in the shrimp sector

Committees	Status	Working period
A. Committees formed before the National Fish Policy (1998)		
Shrimp Cultivation Regulation Committees (1986) at division, district and upazila levels	Formed	Feb.'86 – Dec.'97
Cabinet Division Sub-committee on Shrimp Cultivation Management and Export headed by the Industries Minister (1991)	„	Jan.'91 – Sep. '98
National Shrimp Mohal Management Committee headed by the Minister of Land (1992)	„	Mar.'92 – to date
Shrimp Management Committee (1994) at divisional, district and upazila levels	„	Jan.'94 – Jan.'98
Development and Management of Shrimp Resource Committees (1998) at division, district and upazila levels	„	Jan.'98 – to date
Central Shrimp Cell at Matsya Bhaban	„	Mar.'94 – to date
B. Committees recommended in the National Fish Policy (1998)		
National Committee on Fish and Shrimp headed by Hon'ble Prime Minister	„	Mar.'98
Executive Committee of National Committee on Fish and Shrimp headed by the Minister for Fisheries and Livestock	„	Mar.'98
Shrimp Cells at field level	Not yet formed	

Details on these committees can be found in Appendix C. The sections below give brief information on the presently acting committees (2002).

Shrimp Mohal Management Committees

The Shrimp Mohal Management Policy (1992) recommended a 2-tier management system through the formation of a National Committee and District Committees. They were established in 1992. The District Committees, however, were dissolved in January 1998, and replaced by the shrimp resource committees at divisional, district and upazila levels.

The National Shrimp Mohal Management Committee is headed by the Minister of Land and consists of thirteen members.¹² The responsibilities of this committee include: (a) formulation of a national policy on shrimp mohal management; (b) undertaking necessary measures for expansion of shrimp cultivation and increasing production; (c) engaging in inter-ministerial coordination; (d) recommending allocation of land for shrimp cultivation; and (e) recommending laws regarding shrimp mohal management.

The policy recommended at least one meeting to be held every six months, but the Committee acted as and when the necessity arose.

¹² The members are: three members of Parliament belonging to Shrimp Mohal Area nominated by the government, Secretary of the Ministry of Land, Secretary of the Ministry of Fisheries and Livestock, Secretary of the Ministry of Forest and Environment, Secretary of the Ministry of Water Resources, Commissioner of Chittagong division, Commissioner of Khulna division, two shrimp farmers nominated by the government and the Joint Secretary of the Ministry of Land as member secretary of the Committee.

Development and Management of Shrimp Resource Committees, 1998

The Committees on Development and Management of Shrimp Resource at divisional, district and upazila levels were set up as per Cabinet Division Notification dated 1 January 1998, following a decision of an inter-ministerial meeting held in October 1997 to reassess and reorganize various committees on shrimp farming, marketing and export, formed by various ministries/divisions. By the same Notification, the above mentioned District Shrimp Mohal Committees were dissolved. The new committees were entrusted to carry out the function of the District Shrimp Mohal Committee, i.e., to initiate the process of declaring khas land as shrimp mohal.

The following paragraphs elaborate the composition and functions of the Development and Management of Shrimp Resource Committees.

- The *Divisional Shrimp Resource Development and Management Committee* is headed by the Divisional Commissioner and consists of 13 members.¹³ Since September 1998, the minister in charge of the district concerned and one Member of Parliament from the concerned district have been included in the committee as advisers.

Scope of work of this committee includes: protect the interests of small farmers and owners of lands adjacent to shrimp ghers; prevent coastal erosion; ensure adequate water supply and drainage in shrimp areas; give directions to the functioning of the District and Thana Committees; and ensure implementation of the Shrimp Cultivation Tax Act, 1992.

- The *District Shrimp Resource Development and Management Committee*, headed by the Deputy Commissioner, also consists of 13 members.¹⁴ Since September 1998 the minister in charge of the district concerned and two members of parliament from the concerned district, have been included in the committee as advisers.

The scope of work of this committee is similar to that of the divisional committee with the inclusion of the following: cooperate in identifying, appraising and recommending areas that are fit for shrimp cultivation and have been put forward by the Thana Committees; and give permission, according to Bangladesh Irrigation Water Rate Ordinance, 1983, for the erection of gates or for closing or cutting of any essential part of dams.

- The *Thana Shrimp Resource Development and Management Committee*, headed by the Thana Nirbahi Officer, consists of 10 members.¹⁵ Since September, 1998, one member of parliament from the concerned district shall be in the committee as adviser.

The scope of work of this Committee is similar to that of the District Committee with the inclusion of carrying out on-the-spot inspections in areas that are fit for shrimp cultivation; receiving, examining and forwarding applications for lease of khas lands; and preparing updated lists of shrimp farms.

¹³ The members are: DIG police, ADC (Rev), DC (Dist.), Superintending Engineer/Executive Engineer (BWDB), Director/Dy. Director (DoE), Conservator of Forest, Additional Director/ Representative (DAE Division), Dy. Director (Fish Quality Control), District FO, 2 representatives of Shrimp Farmers Association.

¹⁴ The members are: SP, ADC, DFO, Dy. Director of agriculture extension division, TNO, Executive engineer of BRDB, Inspector nominated by the Director/Dy. Director of the Department of Environment, one representative of the Dy. Director of Fish Quality Control, Thana Fisheries Officer, two representatives from District Shrimp Farmers Association and District Fisheries Officer.

¹⁵ The members are: ADC (land), OC of thana, Thana Agriculture Officer, Forest Range Officer, Sub-divisional Engineer of BWDB, Inspector nominated by the Director/Dy. Director of the DoE, 2 representatives from shrimp farmers, 1 representative from Bangladesh Frozen Food Exporters Association and Thana Fisheries Officer.

While the activities of the committees were enhanced in 1998, some of the apparently important activities of the committees formed in 1994 were omitted, for example, the powers: to compensate the paddy cultivators for sustaining losses caused by salinity of water; to issue licenses for shrimp cultivation; and to determine land-rent. No justification was offered for the exclusion of these powers from the 1998 Committees, and therefore, it remains highly contentious as to whether the need for compensating the aggrieved paddy-cultivators has ceased to exist while it is obvious and evident that more paddy-lands are coming under the scope of shrimp cultivation, causing loss to paddy-cultivators.

As opposed to the common perception that the various committees on shrimp development and management do not function, it has been revealed from the records of meetings at Khulna DFO and Dumuria TFO offices that these committees do function. This was mentioned also in the Focus Group held in Khulna by the study team. However, it is noted that the farmers expect greater support from the officials at field level.

The Shrimp Cell

With the view to ensuring proper management of shrimp production and carrying out related activities, a Central Shrimp Cell was established, by an office order dated 12 March 1994, under the administrative control of the Fisheries and Livestock Ministry. The Cell has nine members, most of whom are support staff¹⁶ and is to work under the supervision of the Director and executive control of an Additional Director of the Fish Directorate.

The office of the Cell is located at Matsya Bhaban. The Cell, according to that office order, is endowed with a wide range of tasks, which relate to such issues as: information; formulating new shrimp projects; development of appropriate technologies; communication with concerned agencies; monitoring; and programs of financing of hatcheries. The actual composition of the Cell does not seem adequate to deal with all these tasks and the Cell is yet to meet the expectation of all the stakeholders. Although the National Fish Policy (1998) mentions that the activities of the Shrimp Cell will be expanded to field level, no such initiative has been taken to date.

Proposed institutional arrangements in the National Fish Policy

The National Fish Policy highlights the institutional aspect of the fish sector and vests the overall responsibility of the sector to the Ministry of Fisheries and Livestock¹⁷. The Land Ministry will be involved in order to take effective measures with respect to habitat and land use management.

In addition to the announcement that the Central Shrimp Cell would be expanded to field level, the policy recommends the establishment of two national committees. These are: National Fish Council headed by the Prime Minister; and its Executive Committee headed by the Minister for Fisheries and Livestock.¹⁸ For purpose of implementation, the policy specifies that coordination will be established among the concerned ministries, divisions, agencies and departments, including the Land Ministry, Local Government, Rural Development and Cooperatives Ministry, Agriculture Ministry, Forest and Environment Ministry, Water Resource Ministry and Youth and Sports Ministry.¹⁹

The policy takes a holistic approach in the management of the fish sector, which is of utmost necessity and a matter of priority for the development of the sector.

¹⁶ One Expert Officer, two Cell Officers, two Cell Assistants, two typists/shorthand typists, two MLSS

¹⁷ See, Clause 9 of the Policy.

¹⁸ See, Clause 11.2 of the Policy. The literal English translation of the terms used in the National Policy, 1998 is National Committee on Fish Related Issues. However, to make it simple, we have translated it as National Fish Council which embraces the same meaning.

¹⁹ See, Clause 11.4 of the Policy.

Institutions at local level in shrimp areas

Four types of institutions functioning at a local level are presented below: local offices of the national government; civil society organizations; local functional organizations and private sector institutions.

- The *national government* is represented at the local level through officials of different ministries and departments. They function at district and upazila levels within the chain of their own organization and are vertically linked. Extension staff of some departments like DAE, BWDB, Social Welfare, Health and Family Planning, operate below upazila level. Though this is not the *de jure* government, in the perception of the public, they are the *de facto* government.

There are also District Co-ordination Committees at district level which are represented by various departmental and administration officials and is chaired by the District Commissioner.

As for the shrimp sector, officials from DoF are present at district and upazila levels. They don't have any extension services at village or shrimp farm level. Committees at divisional, district and upazila levels for management and development have been described earlier in this section.

Besides the setup of national government at local level, there exists the union parishad, which is the lowest unit of local government institutions. They play an important role in conflict resolution.

- NGOs are the most organized *civil society* organizations that operate almost in every nook and corner of the country. Their main thrusts are advocacy, social mobilization, human development and poverty alleviation. They mostly work with a target group approach, addressing most of their programs to the poor and women. Besides, there are many NGO-type of civil society formations and associations, like forums of women, journalists, teachers, medical practitioners, and legal practitioners. They function as advocacy groups, but mainly in an *ad hoc* manner. However, the role of NGOs in the activity chain of shrimp cultivation, processing and marketing is limited. They look at the issues more from one particular than from a holistic view and their involvement is rather peripheral, focusing on concerns that are associated to the shrimp sectors, such as: environmental concerns; livelihood of shrimp fry collectors; effects on the existing social safety network; and use of coercive methods in shrimp farming.
- *Local community and functional organizations* (LFOs) are developed to manage and maintain specific local initiatives. Among these LFOs are water management committees, which are highly relevant to shrimp cultivation.

There is a wide range of Community Based Organizations (CBOs) operating at the grass root level. Among these are landless groups, women groups, farmer cooperatives, fishermen cooperatives, and resource management organizations. These are mostly village-based. These organizations may play an important role in initiating community-based management for shrimp culture.

- The shrimp sub-sector is driven by the *private sector*. The community of entrepreneurs, traders and various livelihood groups, though not the fry collectors, are organized in different organizations and forums to pursue their respective group interests, such as: the exporters association; the shrimp farm owners association; the processors association; and the influential hatchery owners association. Some shrimp farmer associations at upazila level have been formed. NGOs can play an important role in this process which only seems to be in an initial stage.

4.3.2 An assessment

In view of the importance of the shrimp sub-sector which provides 86% of the foreign currency earning of the fish sector and employs about ¾ million (mainly poor) people, it is logical and justified that the sector is well organized with well defined responsibilities and has an effective and efficient coordination among government agencies at all levels, NGOs and private organizations. Co-ordination among the partners should encompass policy formulation, planning, project implementation and production, including such important aspects as: quality control and certification; training of livelihood groups and extension; technological improvements; and environmental management. In general, the government should refrain from participation in the production itself, but should focus on a facilitating and regulatory role, guaranteeing high quality of shrimps, produced in an environmentally friendly and socially beneficial way.

At a *national level*, it is of interest to note that ministries other than the Ministry of Fisheries and Livestock have been in the forefront in the institutional arena of shrimp management. The major players in this process have been the Ministry of Land, the Ministry of Industries, and the Cabinet Division. The National Fish Policy however clearly spells out that the Fisheries and Livestock Ministry has been vested with the responsibilities of overall management of fish and fish habitats, which include shrimp.

Harmonization of policies has to start at a very high level and can best be done in the proposed *National Fish Council* headed by the Hon'ble Prime Minister and supported by its *Executive Committee* (Executive Committee of National Fish Council) headed by Minister for Fisheries and Livestock.

The efforts to manage the shrimp culture by forming *various committees* at different times, no doubt, has made important contributions, but in spite of these committees, well formulated policies and an acceptable legal regime, a distinct institutional set up for the management of the shrimp sub-sector did not materialize. The weak link in the institutional set up is DoF, that lacks the capacity to use and enforce the legal provisions entrusted to it, while the well-intended establishment of the Central Shrimp Cell in 1994, was not good enough for management of this so vital sub-sector. There is an significant imbalance in the tasks assigned to this Cell and its institutional and personnel capacity. Moreover, contrary to the recommendation of the National Fish Policy, the Central Shrimp Cell has not been extended to the field level. It would seem logical that DoF at least has a strong shrimp wing with an organizational framework from the highest level down to the field level.

At regional and local level, the existing mechanisms of District and Thana Shrimp Resource Development and Management Committees, and the local level traditional shalish (court) are working more or less satisfactory, although the existing conflict resolution structures are sometimes accused of favoring the rich and well-connected people.

The co-ordination for normal ADP activities is done well in the monthly meetings of the District Co-ordination Committee.

Informal institutions, such as: associations of shrimp farmers, local functional groups (Water Management Organizations) or community organizations (landless and women groups) can play an important role, supported by NGOs, in initiating a community based management for shrimp culture, as well as in building the communication bridge between the government and stakeholders.

4.4 Management of the shrimp sector – summed up

In general terms, a representative government is responsible for an efficient, effective and accountable use of the country's resources (such as: shrimp, land and other natural resources; labor; infrastructure; knowledge; and institutional capacity) that optimally contributes to the well being of

the population as a whole. Governments make conjunctive use of the instruments of policies, laws and institutional arrangements to achieve the desired goals.

Shrimp is an extremely important sector about which the policy and the legal instruments as well as the institutional arrangements have been discussed earlier in this chapter. An effort to have a first impression of the functioning of these instruments in conjunction is made in Table 10. The table is not exhaustive but summarizes which policies and laws with their respective implementing agencies deal with the following specific major areas in relation to the shrimp sector:

- ◇ production control;
- ◇ quality control of shrimps;
- ◇ export and marketing;
- ◇ environmental impacts
- ◇ social aspects / livelihoods, including such issues as equitable distribution of the benefits of production.

The matrix of Table 10 leads to the following conclusions.

- In all areas of shrimp management (production, quality control, marketing and export, environment and social aspects) several GoB organizations are involved, requiring interaction and coordination for adequate management.
- In none of the areas of shrimp management there seems to be a lack of policies and legal instruments. There also seems to be a rather clear -- though sometimes overlapping -- distribution of management tasks.
- Main and major problems are related to implementation and enforcement of policies and legal instruments.
- There seems to be one exception to the above. It is not clear whether adequate instruments are available for implementing an equitable distribution of profits made through the shrimp sector. This is essential in the context of poverty alleviation and the ICZMP objectives.

Table 10: Summary of major issues, policies, laws, institutional arrangements, tasks and bottlenecks

Area of private and GoB involvement	Tasks and responsibilities	Related policies	Related laws and regulations	GoB agencies involved	Tasks/ Responsibilities	Private organizations	Bottlenecks
Production (Quantity)	Land allocation Technology Water management	Shrimp Mohal Management Policy (1992) National Fish Policy (1998) National Land Use Policy (2001) National Environment Policy (1995) National Water Policy, 1998 National Agriculture Policy, 1999.	Shrimp Mohal Management Policy (1992) The Private Fisheries Protection Act, 1889. The Protection and Conservation of Fish Act 1950 The Government Fisheries (Protection) Ordinance 1959 The Marine Fisheries Ordinance 1983 The Shrimp Cultivation Taxation Act 1992 Tax regulations/subsidies	MoL	Chairing the Committee, Land zoning & allocation	Water Management Associations (WMAs) Farmers Association Resource Management Organization Hathery Owners Association Shrimp Processors Association	Lack of sector strategy and implementation plan. Lack of co-ordination mechanism for the stimulus and control which is spread over many agencies. Lack of adequate extension service, R&D and training.
				MoFL, DoF	Dev of technology, Extension services, Member-Secy.of Committees		
				MoA	Pesticide control		
				MoWR	Water management		
				Div./Dt/UZ Committees	Land allocation, Registration, Conflict resolution, Field level overview		
				Cabinet Division	Interministerial co-ordination		
Quality of shrimp	Technology Certification	National Fish Policy (1998)	The Fish and Fish Products (Inspection and Quality Control) Ordinance, 1983 Inspection and Quality Control Rules, 1997 Hazard Analysis Critical Control point (HACCP) Standard Code of Conduct prepared by ATDP-II	MoFL, DoF	Hygienic farming Labs for quality control	Seal of Quality (SoQ) Organization being considered under ATDP-II	Lack of mechanism/capacity of DoF in enforcement of laws.
				Div./Dt/UZ Committees-1998	Field level overview		
Marketing and export	Marketing Facilitating export	Export Policy	The Export Promotion Bureau Ordinance, 1977 The Trading Corporation of Bangladesh Order, 1972 The Export Processing Zones Authority Act, 1980 Notification on Development and Management of Shrimp Resource Committees [Cabinet Division Notification Dated 1.1.1998 and 3.9.1998).	MoI, EPB MoC, TCB	Promotion of marketing & export	Shrimp Exporters Association	Lack of adequately ensuring the required export quality.

Area of private and GoB involvement	Tasks and responsibilities	Related policies	Related laws and regulations	GoB agencies involved	Tasks/ Responsibilities	Private organizations	Bottlenecks
			Tax regulations/subsidies				
Environment	Land use Water quality Fry catching Mother shrimps	National Environment Policy (1995) National Fish Policy (1998) National Land Use Policy (2001) National Water Policy, 1998 National Agriculture Policy, 1999. National Forest Policy, 1994	Environment Conservation Act, 1995 Environment Court Act, 2000 Environment Protection Rules under Environment Conservation Act, 1995 Marine Fisheries Ordinance, 1983 Agriculture Pesticides Ordinance, 1971	MoEF, DoE	Formulation, monitoring & enforcement of standards Salt water regulation	Environmentalists Forum WMAs	Lack of shrimp land zoning Lack of set standards Lack of adequate empowerment Lack of adequate mechanism for enforcement Lack of monitoring of and generation of data and information
				MoFL, DoF	Set standards, monitoring & enforcement of quota, catching etc.		
				MoA	Pesticide control		
				MoWR (WMAs)	Salt water regulation		
				MoL	Land use zoning		
Social Aspects	Equity Labour conditions	Labour Policy, 1980 National Fish Policy (1998) Shrimp Mohal Management Policy (1992)	Workmans Compensation Act, 1923 Children (Pledging of Labor) Act, 1933 Workmens Protection Act, 1935 Payment of Wages Act, 1936 Maternity Benefit Act, 1939 Minimum Wages Ordinance, 1961 Factories Act, 1965 Employment of Labor (Standards Orders) Act, 1965 Industrial Relation Ordinance, 1969 Zakat Fund Ordinance, 1982 The Shrimp Cultivation Taxation Act 1992	MoLabor	Implementation of labour laws & protecting rights of workers	NGO CBO	Mechanism of equitable distribution of profit through taxation is basically lacking.
				Mo Social Welfare	Devising safety nets and monitoring enforcement		
				Mo Women and Children Affairs	Implementation of national & international laws/charters, protecting rights of workwomen and children		
				MoWR	Levying taxes on shrimp production		
				Div/Dt/UZ Committees-1998	Field level overview Conflict resolution		

5 CAN PDO CONTRIBUTE TO AN EFFECTIVE MANAGEMENT OF THE SHRIMP SECTOR?

Experts strongly agree: that *effective management is urgently needed* to save the shrimp sector; that the *conditions are optimal* to make this sector a key contributor to economic and social development in the country and in particular in the coastal zone; that a well-managed shrimp industry would greatly *contribute to the image of Bangladesh*; and that this only can be done under the *coordination of a proactive government*. However, they also agree, that the development of the sector is *seriously threatened* (some refer to it being at the *brink of collapse*) after a rapid expansion in the 90s when the shrimp earnings almost tripled. There is a variety of reasons for this [see also DoF, 2002a]:

- ◇ deteriorating tendencies in parts of the production chain, including the reduced availability of wild fries and an increased incidence of shrimp farm diseases;
- ◇ social problems related to a highly skewed distribution of the profits made in the sector, and human right violations in shrimp polders;
- ◇ uncertain developments of the world economy and corresponding shrimp prices; and
- ◇ difficulties in Bangladesh to meet more strict international standards.

Solutions seem to be far away as a stalemate situation has developed between the main players: government agencies, donors, private sector and experts.

In PDO's reconnaissance and building-up phase of ICZMP, the question put forward in the title of this chapter seems a legitimate one, in particular in view of the sector's potential to contribute to both economic growth and improvement of livelihoods, the two key objectives of ICZMP. To answer this question, the following sections first give a brief overview of the strength and weakness of the sector, the ongoing efforts to which a PDO should be complementary, and the typical management problems, the PDO would focus on. In a final section a possible role of PDO is discussed.

5.1 Strength and weakness of the shrimp sector²⁰

The general and major strength of the demand-driven shrimp sector is its potential to meet a growing world demand for high quality shrimps, produced in an environmentally and socially sound way.

More specifically, aspects of strength relate to the country's natural and human resources and include: access to raw material (wild PL and increasing hatchery production); climate, topography and water resources, which are suitable for an extensive and environmentally friendly aquaculture system; fertile soils; a significant ability for the sector to absorb the poor (both in PL collection and as labourers on farms); and the low costs of labour - providing a significant competitive advantage, relative to other countries, both for farm production and fish processing.

Weaknesses, however, are manifold. They relate mainly to aspects of technology and management, including: high PL mortality (due to poor handling and poor transport facilities) and consequently high costs of seed, particularly of golda; non-optimal use of inputs; high feed price; inadequate extension; inadequate pond construction; poor infrastructure in terms of access thus creating major problems with water exchange; poor transport infrastructure causing significant problems for product flow and quality; the prevalence of a high degree of pathogens caused by low pond depths, inter-mixing of river water and poor handling practices at depot level; lack of resource management; lack of mechanisms to distribute the profits made by the sector as a whole; very poor application of HACCP compliance; and very poor international reputation.

²⁰ After [Banks, 2002].

These weaknesses make the sector vulnerable to such major threats as: diseases; product contamination; theft; environmental damages; floods and heavy rains; social conflicts; international price fluctuations; and the international trend of increased quality requirements.

The main weakness, however, at the moment is the lack of a reliable quality control against product contamination and the failure of the government's quality assurance enforcement system. This has to be seen in the light of international developments towards certification standards. Influential organizations, such as the World Wildlife Fund and the Global Aquaculture Alliance, are developing codes of conduct in the areas of: food safety and hygiene; environmental standards; fair labor practices and human rights. Failure to meet these standards will limit Bangladesh' access to the world market, will lead to international buyers losing confidence in shrimps coming from Bangladesh, and may ultimately result in consumer-boycotts of shrimp from Bangladesh.

It is of high concern that Bangladesh -- having already difficulties to meet the present hygiene and food safety standards -- is not positioning itself proactively to meet these forthcoming international certification standards in contrast to many other shrimp producing countries.

5.2 Ongoing efforts

The Government of Bangladesh attaches high priority to shrimp and coastal aquaculture, as expressed through its National Fish Policy (1998) and its Fifth Five Year Plan (1997 - 2002). The major objectives emphasized in preparation of this proposed five-year plan are: infrastructure development of the shrimp farming areas; socio-economic development of the coastal fishers; and structural development associated with modern technology to improve the quality control of shrimp and fisheries products.

The Government provides a host of financial and economic incentives, such as: tax holidays on profits; accelerated depreciation; exemption of income tax on interest of foreign loans; exemption of tax on royalty; technical know-how and technical assistance fees; income tax exemptions on foreign technicians employed in shrimp businesses for a period of 3 years; and remittance of 50% of the salary of foreign nationals employed in approved industries. Moreover, shrimp exporters are allowed to retain 40% of export earnings for miscellaneous purposes; there is no Excise Duty or VAT while exporting shrimp products; there is no licensing or registration fee for shrimp farmers, fry collectors or small traders; shrimp entrepreneurs get support from the banking sector in the form of reduced interest payments of 9% (against 15% for others); and the Ministry of Commerce of GOB has simplified export procedures. A number of these special conditions for the shrimp sector are primarily beneficial to the hatchery and processing companies.

Development activities focus on: reducing PL mortality (better care in transportation, better handling and use of pre-nurseries); more optimal use of inputs (lower stocking rates, use of low-cost high-valued nutritional feed, application of fertilizers); significant development of support infrastructure (canals and road access); improvement in the efficiency of product flows; reduction in contamination through a change in handling practices; increasing exports; and improving the quality and corresponding certification procedure.

From the many development partners working in this sector, DFID has to be mentioned in particular, providing continuous support through various development projects. The main development projects are: Agrobased Industries and Technology Development Project (ATDP-II); CARE's GOLDA Project; and the Fourth Fisheries Project. Among the many interventions, worth mentioning, are the construction of: water management infrastructures (dikes, canals, sluice gates) on public and private land; hatcheries for shrimp seed production; demonstration farms and training centers for technology demonstration and farmers training; and landing and service centers to provide better post harvest facilities.

Special reference is also made to the recently concluded Shrimp Action Plan (SAP), a six month review from April to September 2002, conducted in partnership by DFID and DoF through the FFP [DoF, 2002a and DoF, 2002b].

Nevertheless, things are not working well and many of the shrimp exporters are in despair. The development partners are also wondering where and how to support the sector.

5.3 Management problems

Management of shrimp production can be defined as the totality of tasks to produce shrimp with the objective: to maximize the economic outputs for the country as a whole under the condition of an equitable distribution of benefits and a sustainable use of natural resources. The shrimp industry in Bangladesh should be recognized internationally for its high quality shrimp produced using socially responsible and environmentally sustainable production methods [see also DoF, 2002a].

This covers a wide variety of tasks of government, non-government and other private organizations and individuals, which has to be carefully coordinated to comply with the above objective. Government above all has a controlling and monitoring role; it sets the rules of the game, for example in terms of quantitative and qualitative targets and establishes the conditions and constraints under which the production process should take place, e.g., related to the environment and an equitable distribution of benefits. Moreover, the government is the objective, public-interest-representing body that monitors the process in terms of the above objective to serve the benefit of the country as a whole.

The government rightly desires more involvement of the private sector, but lacks the capacity to design and implement its own role of control and monitoring. The discussion on the challenges and serious threats the sector is facing continues to boil down to the issues of poor management by the Government and its lack of leadership to control the unsustainable profit-earning focused activities of some irresponsible private actors. Strict and effective government control and regulation is urgently required.

The shrimp sector is not really suffering from a lack of visions, nor from inadequate or absence of policies, legal instruments or institutional arrangements and mandates. (Though adaptations may be necessary for smooth management, they are not essential to meet the expectations of this potentially profitable and employment generating sector.) The real bottleneck lies in the lack of the leading agency taking (or being allowed to take) its role in managing the sector, supported by sufficient capacities and willingness of all implementing agencies to plan and harmonize policies, to enforce rules and regulations (including quality control) and to coordinate development activities.

5.4 Complementary role of PDO-ICZMP

There have been many studies on shrimp culture and its management, generating suits of recommendations. Most of these studies, however, lack adequate ownership of Bangladesh GoB agencies and arrangements for implementing their recommendations, with the predictable consequence that studies pile up without having the expected impact on development of the sector.

Facing exactly this problem, the SAP suggested that the ICZMP program offers an unique chance to integrate a shrimp sector policy within a framework policy document for the coastal zone and to improve interagency co-operation [DoF, 2002a: p2]. Accepting this suggestion as a genuine demand for a coordinating role, the PDO-ICZMP project (as its justification emphasizes the development and operationalization of such roles) is then challenged to take the initiative to answer questions as: **What** role and **How** PDO can play such a role?

Before answering these questions, it is emphasized that the PDO does not aim to develop into a new organization or agency but rather into a platform for harmonization of government policies and actions and envisages facilitating and supporting integrated decision making by an adequately empowered ICZMP framework. In other words, the PDO does not aim to develop the capacity for control and monitoring itself, this should explicitly remain with the mandated line agencies. Bearing this in mind, potential roles of the PDO could include the following.

- *Moderating the harmonization of policies.* PDO staff could screen the different overall and sector policies on complementarities, interactions and incompatibilities. Proposals can then be made to avoid confusions related to overlaps and inconsistencies and to make optimal use of potential areas of synergy. This should be done, of course, in close interaction with involved parties, in which the PDO can have a moderating role. Concluding documents should be submitted for approval to higher administrative and political forums like the TC, SC or the Fish and Shrimp related National Committees. The most important aspect in this harmonization seems to be management of land resources, which could be given special attention and emphasis.
- *Formulating a sector strategy and implementation plan.* It is through this activity that integration could move beyond intentions and policy statements. Facilitating and supporting the interaction between implementing agencies, a sector strategy and implementation plan would be drafted, outlining such things as: the concrete objectives and targets; interventions and corresponding schedules; institutional arrangements for implementation; and indicators to measure achievements. Such a strategy and plan would focus on implementing recommendations and proposals identified in studies and policies and could be considered a mutually agreed working order for all agencies involved. GoB “ownership” is a condition.
- *Monitoring developments and implementation.* This activity would encompass: (i) the development of indicators to measure performance of the shrimp sector in accord with the agreed objectives (previous bullet point); and (ii) build a “management information system” on these indicators. As mentioned, monitoring activities should be carried out through the existing administrative structure. An important contribution of the PDO would be to go beyond the typical production-oriented sector objectives and develop and “measure” indicators that represent national interests such as: macro economic benefits and poverty reduction.
- *Keeping track of projects in the shrimp sector.* Such an activity could encompass the development and operation and maintenance of a data on shrimp related projects.
- *Defining the role of the government and the private sector.* PDO could be instrumental in moderating the discussion about the task distribution between public and private organizations and prepare for the corresponding formal arrangements. This is an important aspect in an efficient and effective management of the shrimp sector.

Proposed actions

Assuming an agreement in principle on the above-depicted role of a future PDO, the question arises how to further operationalize such a role. Experiences elsewhere and orientations in the first year of the PDO project have shown that these roles preferably should be developed for concrete issues requiring integrated management and decision making. Working on such concrete issues would demonstrate the complexity and the difficulties ahead to bring about the desired harmonization, integration and coordination and would bring the discussions on ICZMP beyond the generic and academic levels.

The shrimp sector in Bangladesh offers a good opportunity to start elaborating a PDO-ICZMP role. As mentioned, the sector needs harmonization and coordinated actions, which is the purpose of

ICZMP. Moreover, the situation seems to have developed into one in which all or most stakeholders will benefit from adequate integrated management.

As a practical first step, it is proposed to make a *Concept Note*²¹ outlining in detail the process to formulate a *sector strategy and implementation plan* as recommended in the recently published SAP [DoF, 2002a]. As mentioned before, such a strategic and implementation document would at least contain: concrete objectives, targets, interventions and corresponding schedules, institutional arrangements for implementation and indicators to measure achievements. Specific objectives and interventions should include a focus on: securing industrial development to enhance employment and regional income; an equitable distribution of the sector's benefits; minimization of the social and environmental cost of production; and ensuring that quality standards are met.

Production of a Concept Note, would take a few months, depending on the collaboration of relevant agencies. As mentioned, upon finalization, it could be immediately submitted for approval and implementation, while at the same time becoming part of a "revolving" CDS. The following steps are proposed:

- ◇ draft an outline of the Concept Note and discuss the approach with the major actors in the shrimp sector as well as WARPO/MoWR;
- ◇ appoint a seconded officer from DoF, preferably from the MoFL (a senior Assistant Secretary), in the PDO office/team;
- ◇ form a Task Group in the TC (before proposing their formation, it will be advisable to discuss this with the relevant Department Chief or his representatives beforehand); and
- ◇ draft the Concept Note between the PDO-ICZMP team and the TC's Task Group.

From the beginning, PDO should assume a *moderating rather than an imposing role*. This would imply that the DoF in combination with the FFP staff would be invited to take the lead in development of such a Concept Note. It is emphasized that the production of such a concept note by the DoF, under guidance of the PDO project would have the important function of being a *try out* for a possible ICZMP approach in general.

²¹ Concept Notes are the agreed-upon ICZM-documents (building blocks) that prepare for a portfolio of interventions and actions to be included in a Coastal Development Strategy (CDS, aimed for the beginning of 2005). To underline the dynamic and process-oriented approach of ICZM, the CDS intends to be a rolling strategy. This implies that activities specified through these Concept Notes will be taken up for implementation at the earliest possible moment and do not have to wait for full and formal approval of a CDS. This whole process would be managed by the project's TC and SC, of which the DoF and MoFL are part.

REFERENCES

- Ahmed, N., 2001.** Socio-economic aspect of fresh water prawn culture development in Bangladesh. PhD Thesis, University of Stirling, UK, 320 pp.
- BBS, 1999.** Statistical Year Book of Bangladesh, 1999. Bangladesh Bureau of Statistics, Dhaka, Bangladesh. 1999.
- Banks, Richard, 2002.** Brackish and marine water aquaculture. Report from the Fisheries Sector Review, DFID. July 2002.
- BCAS, 2001a.** The coastal shrimp sector in Bangladesh: review of the literature with annotated bibliography. Bangladesh Centre for Advanced Studies (BCAS), Dhaka, Bangladesh. March 2001.
- BCAS, 2001b.** The Costs and Benefits of Bagda Shrimp Farming in Bangladesh: an economic, financial and livelihood assessment. Prepared as part of the Fourth Fisheries Project, Bangladesh Centre for Advanced Studies (BCAS), Dhaka, Bangladesh. August 2001.
- CARE, 1999.** Report on training needs assessment of golda gher farmers. Golda Project, CARE-Bangladesh. (Cited from Banks, 2002).
- DFID, 2002.** Wider Contextual Background of Coastal Shrimp Aquaculture in Bangladesh - The Policy Environment, Final Report. Dhaka; DFID. September 2002.
- DoF, 2002a.** Shrimp aquaculture in Bangladesh; a vision for the future. Department of Fisheries, Ministry of Fisheries and Livestock. An output from the Shrimp Action Plan, sponsored by DFID Bangladesh through the Fourth Fisheries Project and the Global Environment Facility. Department of Fisheries, Dhaka, Bangladesh. October 2002.
- DoF, 2002b.** Option paper: balancing resource conservation with livelihood protection for shrimp fry collectors; an integrated approach to managing coastal resources. Department of Fisheries, Ministry of Fisheries and Livestock. An output from the Shrimp Action Plan, sponsored by DFID Bangladesh through the Fourth Fisheries Project and the Global Environment Facility. Department of Fisheries, Dhaka, Bangladesh. October 2002.
- FFP, 2002.** Status of the shrimp hatchery and nursery operations in Bangladesh. Fourth Fisheries Project, Department of Fisheries, Dhaka, Bangladesh. October 2002.
- Frankenberger, Timothy R., 2002.** A livelihood analysis of shrimp fry collectors in Bangladesh, future prospects in relation to a wild fry collection ban. Tango International Inc, for Department of International Development, Dhaka, Bangladesh. August 2002.
- Hoq, M.M. and G. Halder, 1995.** Socio-economic Impact & Constraint of Shrimp Culture in Bangladesh. FRI Technical Report 11. Fisheries Research Institute, Mymensingh, Bangladesh. Cited from Frankenberger, 2002.
- Huntington, 2002.** Scoping study for the certification of shrimp aquaculture in Bangladesh. An output from the Shrimp Action Plan, sponsored by DFID Bangladesh through the Fourth Fisheries Project and the Global Environment Facility. Department of Fisheries Dhaka, Bangladesh. August 2002.
- INFOFISH, 2001.** Intergovernmental organization for marketing information and technical advisory services for fishery products in the Asia Pacific Region. Kuala Lumpur, Malaysia. International no 3/2001 May/June. www.infofish.org.

- Karim and Stellwagen, 1998.** Shrimp Aquaculture. Fourth Fisheries Project, Preparatory Phase for National Fisheries Sector Development Programme, Department of Fisheries, Dhaka, Bangladesh. 1998.
- MoFL, 1998.** Jatiyo Maytsho Niti (National Fish Policy). Ministry of Fisheries and Livestock, Govt. of Bangladesh, Dhaka, 1998.
- Nuruzzaman, Md., 2002.** Status of the shrimp hatchery and nursery operations in Bangladesh. An output from the Shrimp Action Plan, sponsored by DFID Bangladesh through the Fourth Fisheries Project and the Global Environment Facility. Department of Fisheries, Dhaka, Bangladesh. October 2002.
- Nuruzzaman, Md. and Debbie Williams, 2002.** Environmental awareness of harvesting wild shrimp fry: training needs assessment for fry catchers and traders. An output from the Shrimp Action Plan, sponsored by DFID Bangladesh through the Fourth Fisheries Project and the Global Environment Facility. Department of Fisheries, Dhaka, Bangladesh. October 2002.
- PDO-ICZMP, 2001.** Institutional Review of Selected Ministries and Agencies by A.T.M. Shamsul Huda; PDO-ICZM Paper No. 08. Program Development Office-Integrated Coastal Zone Management, Water Resources Planning Organization, Ministry of Water Resources, Dhaka, Bangladesh. November 2001.
- PDO-ICZMP, 2002.** Previous Initiatives and Base Conceptual Documents, Working Paper WP001. Program Development Office-Integrated Coastal Zone Management, Water Resources Planning Organization, Ministry of Water Resources, Dhaka, Bangladesh. May 2002.
- SOQ, 2003.** Shrimp farming upazilas in the south western region, shrimp farming upazilas in the south eastern region; www.atdpsoq.biz, Seal of quality, Agrobased Industries and Technology Development Project, Phase II (ATDP II), Dhaka, May 2003.
- WB/NACA/WWF/FAO, 2000.** Case Studies on Shrimp Aquaculture Management in Bangladesh. Dhaka; Component of the WB/NACA/WWF/WHO Programme on Shrimp Farming and the Environment. October 2002.

APPENDIX-A : POLICY REGIME OF SHRIMP CULTURE

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A.1 GENERAL

The first and formal policy on shrimp management is the Shrimp Mohal (Estate) Management Policy of 1992 issued by the Ministry of Land.²² The earlier efforts on shrimp culture regulation appears to be the Shrimp Cultivation Regulation Committees set up in 1986 at division, district and upazila levels in Khulna region, functioned till 1 January 1998.²³ The Cabinet Division Subcommittee on Shrimp Cultivation Management and Export headed by the Industries Minister established by a notification issued by the Cabinet Division on 19 January 1991, which functioned till 3 September 1998.²⁴

This chapter presents the policy regime of the shrimp sector as opposed to the wider domain of fish and fisheries. The primary aim is to locate the position shrimp cultivation within the broad policy framework of the government. It further attempts to determine the existence, adequacy, consistency, and effectiveness of the policy regime that is prevalent in the realm of coastal shrimp farming.

Government policies adopted at different times for the management of shrimp culture have been presented in the following matrix, which have been detailed out in the subsequent paragraphs.

Summary overview of shrimp related policies and Cabinet decisions

Policy	Relevance
Shrimp Mohal Management Policy, 1992	Identification and declaration of shrimp areas
The National Fish Policy 1998	Details of government policies on relevant shrimp culture and livelihood issues
National Water Policy, 1998	Addressing the needs of all sectoral water users against an uni-sectoral approach
National Environment Policy, 1995	Protection of the environment
Export Policy, 1997-2002	Promotion of export and consequent promotion of shrimp culture
National Land Use Policy, 2001	Allocation of land for shrimp culture and land zoning
Agriculture Policy, 1999	No reference to sustainability of environment and other water uses including fish and shrimp
Industrial Policy, 1999	Declaring frozen food industry a “trust sector”

A.2 SHRIMP MOHAL MANAGEMENT POLICY 1992

The Shrimp Mohal Management Policy in its preamble emphasizes the need for an appropriate and just land management policy for shrimp culture. It aims not only at production increase but also for the alleviation of the socio-economic condition of the people. It envisages that land suitable for shrimp cultivation will be declared as Shrimp Mohal. This policy statement does not distinguish between government and private land and refers to any land suitable for shrimp cultivation.

A.2.1 Shrimp mohal area

The Policy describes Shrimp Mohal area in the following manner.²⁵ Firstly, areas presently under shrimp cultivation shall be declared as Shrimp Mohal. This again refers to all land i.e., kash and private. Secondly, the Ministry of Land may declare such area as Shrimp Mohal upon receipt of

²² Dated 30 March 1992.

²³ These Committees were dissolved by Clause 2 of the Notification dated 1 January 1998 issued by the Cabinet Division.

²⁴ This Committee was dissolved by Clause 2 of the Notification dated 1 January 1998 issued by the Cabinet Division.

²⁵ See, Clause 3 of the Shrimp Mohal Management Policy 1992.

recommendation either by the Ministry of Fisheries and Livestock, Ministry of Forest and Environment, or any other organization or board established by the government. It is of interest to note that Ministry of Land assumes all responsibility to declare any land as Shrimp Mohal. Thirdly, in order to declare any new area as Shrimp Mohal, the Deputy Commissioner of the district concerned within 30 days upon receipt of proposal/recommendation from the District Shrimp Mohal Committee shall forward the same along with his opinion to the Ministry of Land through the Divisional Commissioner for a decision to be taken by the National Committee. The procedure appears to be too lengthy and complicated to be pursued by a commoner.

The policy further states that no khas land within Shrimp Mohal can be leased out as agricultural land on long term or short-term basis. Further, any land if already leased out as agricultural land, falls within shrimp Mohal area, shall be deemed to have been leased for shrimp cultivation.²⁶ This policy statement reinforces government's commitment and priority to the shrimp sector.

A.2.2 Conditions for granting settlement of khas land in shrimp mohal

Conditions for granting settlement of khas lands in shrimp Mohal has been provided in clause 4 of the policy. The conditions are: (a) the applicant must be a fisher, fish trader or fish processor (b) the applicant must be citizen of Bangladesh (c) persons and institutions having technical or managerial skill shall be given preference (d) the applicant shall have the financial ability to develop Shrimp Mohal (e) priority will be given to those who have experience in shrimp cultivation (f) a maximum of 10 acres of land may be allotted in favour of each farm. However, if anybody has shrimp-cultivation-land of his own, he may be granted land to the extent that the total area of the land (including his own) does not exceed 15 acres. The only exception to this rule would be the owners of shrimp processing factories and of any project that has been declared to be competent, technically and financially, to cultivate shrimp in a scientific and advanced method. In such cases, a maximum of 30 acres of land may be granted in favour of the applicant. The ceiling for such lease may, if necessary, be increased by the Land Ministry in special cases (g) in case of the lease of any *khas* land, or canal or other land situated within any private *gher/ghona*, the owners of such *gher/ghona* will be given priority (h) lease may be granted for a maximum period of 10 years at an annual rent of one thousand and five hundred taka per acre. An increased revenue of 5%, that is, seventy five taka per acre must be paid annually. The rate of the revenue may be revised after every five years. If the rate is not revised/re-fixed, revenue will be charged at the rate of 5% as mentioned.

A.2.3 Conditions precedent to the recipients of khas land for shrimp cultivation

According to Clause 6 of the policy the recipients of *khas* lands for shrimp cultivation must comply with the following conditions.

- a. The allottee must make the full payment of the annual rent fixed for the first year within one month of the allotment. He will then execute a contract and will obtain possession of the land.
- b. The annual rent must be paid within the stipulated time in every year. The rent must be paid off before the harvesting of fish.
- c. Shrimp cultivation must be continued in successive years.
- d. The area of each lessee must be separate; and in no circumstances can a *gher* be broken so as to be merged with any other *gher(s)*. The leased land cannot be transferred to anybody else.
- e. In case of non-compliance with any of the said conditions, lease can be terminated at any time without showing any cause thereto, in which case the allottee will have no claim over the land.

²⁶ Clause 3 of the Shrimp Mohal Management Policy 1992.

- f. The leased land must not be used for any purpose other than shrimp cultivation. If it is not so used, the Deputy Commissioner of the concerned District may repudiate the lease.
- g. After the termination of the term of the lease, fresh application will have to be made for further cultivation of shrimp, provided that the earlier lease would not give rise to any right or claim to the later renewal. The contract would contain specific provision to such effect.

Clause 6 of the policy further specifies that if anyone personally takes lease of the land of any cultivator/marginal-cultivator situated within the *gher* of the *ijarada*, that cultivator/marginal-cultivator must be paid appropriate revenue/produce or compensation. The policy further elaborates that in the past, there were a lot of complain about the above-mentioned matter; many cultivators sustained loss, even the marginal cultivators lost their last possessions. It is necessary to encourage shrimp-cultivation, but at the same time, it is the responsibility of the Government to safeguard the interest of the owners of small quantity of land and the marginal cultivators. The lessee must give an undertaking in this regard while executing the contract. If any such aggrieved person submits any complaint to the Deputy Commissioner, he will take appropriate measures after investigating into the allegations within a period of fifteen days; and may repudiate the lease of such government *khas* land/shrimp *mohal* in order to safeguard the interest of such aggrieved parties.

A.2.4 Conditions precedent in the distribution of khas land

The following conditions must be fulfilled during the process of distributing khas land in the Shrimp Mohal area.²⁷

- a. The allottees may make application, stamped with sufficient court-fee, through the Deputy Commissioner or the local authority. This application will be considered by the District Shrimp Mohal Committee within a period of 30 days, and will then be forwarded to the Land Ministry along with necessary recommendations. The Ministry will communicate its decision to the Deputy Commissioner within 30 days, and also will apprise the applicant directly through a letter. The Deputy Commissioner will, after receiving the approval and the requisite revenue, proceed with necessary documentation, provided that the terms and conditions of the lease must be in accordance with the draft supplied by the Ministry.
- b. If any shrimp cultivator intends to cultivate in any declared Shrimp Mohal, he must obtain a license from the Government on payment of the requisite fee. The Government may take appropriate action according to existing law in case of shrimp cultivation without license. It is to be noted here that even if anybody cultivates by using the land of any marginal farmer under any private contract and without taking lease of any government land, the Deputy Commissioner may, in case of any complaint in relation thereto, take legal actions including cancellation of the license.
- c. If any new land in the coastal area is included in any shrimp *mohal*, it must be immediately identified by the local survey officer and the lengthy process of the department of Land Records and Survey must be avoided.
- d. Since the District Committee will be solely responsible for identifying shrimp cultivators, it must ensure complete justice. At the same time, the Committee will be empowered to take resort of existing criminal law and to cancel the lease of any farmer, who will be proved to have obtained the lease by means of any fraudulent misrepresentation of facts.

Thus, in order to distribute khas land, the government is obliged to abide by the above-mentioned conditions and principles.

²⁷ See, Clause 6 of the Policy.

A.3 REGISTRATION OF SHRIMP GHER / FIRM

Registration of Shrimp gher/firm has been made compulsory. The shrimp gher/firm are required to be registered through the Thana Development and Management Committee for Shrimp Resource.²⁸ Such registration procedure does not require any fees to be paid. The Cabinet Division merely indicates that shrimp gher/firm have to be registered but it does not indicate to which body they will be registered. Further, there is no sanction i.e., fine or any other punitive measure for noncompliance. The intention of the government in this context may be limited only to record keeping exercise.

A.4 THE NATIONAL FISH POLICY 1998

The absence of an authentic English text of the Policy has raised confusion whether the *Jatiyo Motsho Niti, 1998*, is to be called **National Fish Policy** or **National Fisheries Policy**, needless to mention that the expressions bear different meanings and connotations from legal point of view. Both the expressions have been used by various authors to indicate the *Jatiyo Motsho Niti*. For example, Ehsanul Habib refers the policy as Fish Policy²⁹ while S.B. Nandi refers as Fisheries Policy.³⁰ On the other hand the DFID Fourth Fisheries Project, in its report on the *Acts and Actors in Fisheries and Shrimp Sector* uses both the terms.³¹ However, it will be more appropriate to call the policy as Fish Policy.

A.4.1 Poverty and livelihood issues in the fish policy

The issue of livelihood has occupied a prominent place in the Fish Policy. One of the objectives of the Policy is to alleviate poverty through creating self-employment and improvement of socio-economic conditions of the fishers.³² In view of this broad objective, the Policy emphasizes that:

- Fish farming on haor, baor and other water bodies with a view to creating alternative source of livelihood for the floating poor fishermen.
- Non-governmental organizations that are interested in poverty alleviation through cultivation, production and management of fish will be involved in expansion of fisheries. Besides, other NGOs will also be encouraged to take up fish-related activities.³³
- Informal credit programme will continue with a view to alleviating poverty and creating employment opportunities. In Bangladesh, the village folks, poor farmers and fishermen community are entrusted with the job of cultivating and catching of fish. There is a necessity of institutional credit scheme in the fish sector in order to make the small fish farms suitable for fish cultivation. However, due to inability of small fish farms to deposit sufficient guarantee, only a very few fishermen are being able to obtain institutional loan. The circumstances compel them to fall prey to traditional 'mahajani' loan.³⁴ In order to ameliorate the situation, the following credit policies shall be adopted:

²⁸ See, Cabinet Division Notification dated 3 September 1998.

²⁹ See, for example his report entitled *Management of Fisheries, Coastal Resources and the Coastal Environment in Bangladesh: Legal and Institutional Issues*, 1999, pages 41, 71.

³⁰ Translated the Policy for the DFID.

³¹ For example, in **page 17** it refers the policy as **National Fish Policy** while in **page 20** refers the same as **National Fisheries Policy**.

³² See, clause 2(b) of the Policy.

³³ See, Clause 9.7.7 of the Policy.

³⁴ See, Clause 9.11 of the Policy.

- Fish sector will be designated as a priority sector for institutional loan.³⁵
- In case of small fish-sector, credit schemes based on intensive monitoring from production to marketing will be widely introduced in lieu of the present system of property-guarantee.³⁶
- Production of shrimp and other exportable fish will be declared as export-oriented industry, and soft-loan, income-tax remission, tax-holiday, etc. privilege may be accorded to shrimp and fish cultivation.³⁷
- A Fish Bank may be established in order to facilitate and expand credit facilities in the fish sector.³⁸
- The fishermen community and fish cultivators may be organized, through cooperative mechanism, to manage the big governmental khas waters, whether natural or artificial, with a view to increasing fish production and alleviating poverty.³⁹
- In order to facilitate the socio-economic amelioration of the fishermen community, the real fishermen will be given priority in granting governmental khas waters.⁴⁰
- Young men and women, who are unemployed, will be given appropriate training and will be encouraged for fishery. They will be provided opportunities for getting capital in such venture.⁴¹
- Special emphasis will be given on ensuring security of the life and property of the fishermen community, and on their socio-economic amelioration. The measures to such end will include:⁴²
 - ◊ Introducing insurance for the life and property of the fishermen, such as, their boats, engines, nets, fish etc.
 - ◊ Taking steps to resist piracy.
 - ◊ Rendering cooperation in improving their professional skill and increasing their income by imparting training to the members of various organizations of fishermen on modern techniques of fishing, preservation, distribution and processing.
 - ◊ Introducing monitoring-based loan schemes in lieu of guarantee-based loan schemes for the fishermen.
 - ◊ Establishing essential infrastructural facilities in the fish landing centers of the coastal areas so that the fish caught by poor fishermen do not perish and they get an opportunity to sell their fish at a good price.
- In order to facilitate the socio-economic amelioration of the fishermen community, the real fishermen will be given priority in the allotment of government khas waters.⁴³

From the above it is evident that poverty and livelihood issues have occupied a prominent place in the fish policy.

³⁵ See, Clause 9.11.1 of the Policy.

³⁶ See, Clause 9.11.2 of the Policy.

³⁷ See, Clause 9.11.3 of the Policy.

³⁸ See, Clause 9.11.4 of the Policy.

³⁹ See, Clause 9.12.1 of the Policy.

⁴⁰ See, Clause 11.1.4 of the Policy.

⁴¹ See, Clause 6.16 of the Policy.

⁴² See, Clause 8.3.4 of the Policy.

⁴³ See, Clause 11.1.4 of the Policy.

A.4.2 Place of shrimp in fish policy

Shrimp occupies an eminent position in the Fish Policy. Clause 7 of the policy deals with the guidelines on coastal shrimp. The Policy clearly spells out that amongst the non-traditional export items fish and fisheries product is first in terms of foreign currency earning and shrimp alone constitutes about 86 percent. It mentions that about 1.40 lakh hector land is under shrimp cultivation. In order to increase production through advanced technology⁴⁴ the Policy mentions in Clause 7 of the following guidelines to be undertaken:

- There shall be Committees at National and other levels, as necessary.⁴⁵ These Committees, run in the light of government policies, shall take effective measures for the development of shrimp cultivation and the implementation of laws/rules in this regard, and for resolving other problems.
- With a view to maintaining ecological balance in the coastal region, necessary measures will be taken to coordinate shrimp and paddy cultivation, or fish and paddy cultivation, concurrently.
- The advanced traditional mode of shrimp cultivation will be given the highest priority. However, in prospective areas, environment-friendly semi-intensive cultivation will be encouraged to a limited extent. Any attempt for the expansion of shrimp cultivation by destroying the mangrove forest, or any activity likely to injure mangrove forest will be prohibited. For the sake of preserving ecological balance, plantation in areas lying in between a shrimp-gher and any adjacent river will be made mandatory for the owners of the concerned shrimp gher.
- Model shrimp cultivation farms will be established, and training for shrimp farmers will be arranged in private sectors, with the cooperation of the government, on the basis of the prevailing conditions of a particular area.
- Shrimp cultivation will be accorded the same privileges as any other export-oriented industry.
- Scientific methods, coupled with proper training, will be introduced so as to ensure that no other species is endangered while harvesting shrimp fries from the natural sources and that shrimp fries are not damaged while transportation. Physical infrastructure will also be set up for this purpose.
- The private sector will be encouraged to set up hatcheries on a commercial basis in order to reduce dependence on natural sources for harvesting shrimp fries.
- In order to facilitate natural reproduction of shrimp, catching shrimp in the sea waters during the peak of the hatching season will be prohibited. Some specified shrimp reproduction areas in the sea will be declared as sanctuary.
- The private sector will be encouraged to set up hatchery of bagda shrimp.
- Initiative will be taken by the government to establish necessary infrastructure in existing and prospective areas for shrimp-cultivation, and security will be ensured while harvesting and marketing the shrimp.
- Special emphasis will be given on increasing the rate of shrimp production by applying appropriate technology. Gradual division of big shrimp farms into small units will be encouraged by improving the system of water supply and drainage in those farms.

⁴⁴ Italics for emphasis.

⁴⁵ Please note that the Policy does not specify at which level such Committees will be set up. The DFID report entitled Acts and The Actors in the Fisheries and Shrimp Sector appears to have inadvertently mentioned about District and Thana Committees.

- Measures will be taken to produce shrimp-feed by using the local ingredients; If necessary, essential ingredients for the preparation of shrimp-feed, such as, fish-meal, vitamin, mineral pre-mix, food binder, etc. will be imported.
- Hygienic measures will be taken for the management of shrimp farms, particularly after harvesting the shrimp. Necessary training will be arranged and infrastructural facilities will be established in order to maintain high quality and hygiene of the harvested shrimp.
- The marketing of shrimp will be strengthened in order to obtain foreign market for shrimp.
- The facilities of quality-control laboratory will be increased and modernized in order to ensure high quality of exportable articles produced from fish and shrimp.
- The Central Shrimp Cell, which was established to provide assistance for shrimp cultivation and management, will be spread over in the field-level. Other facilities, including competent manpower, will be increased so as to make the shrimp-cells more effective.
- Coastal areas will be specified for shrimp cultivation. Cooperation of the Environment and Forest Ministry will be received in order to increase the production of shrimp, preserve the shrimp-asset and maintaining ecological balance.
- Joint venture with appropriate institutions of countries having advanced technology of shrimp-cultivation will be encouraged in order to conduct environment-friendly semi-intensive shrimp cultivation.
- Insurance facilities will be introduced in the field of fish and shrimp farming.

The other policy statements regarding shrimp, apart from Clause 7 of the policy are as follows:

- Combined cultivation of shrimp and fish will be encouraged in paddy-fields in the coastal areas, which are immersed under light saline water.⁴⁶
- Initiative will be taken, after assessing the feasibility, to reproduce golda shrimp in the existing government hatcheries and fish farms.⁴⁷
- Transportation of exportable shrimp by open vehicles will be prohibited. Steps will be taken for the transportation of fish only by insulated or refrigerated fish-van.⁴⁸
- The system of registration for fish and shrimp hatcheries and nurseries will be introduced so as to ensure quality control.⁴⁹

From the above it is evident that shrimp occupies a prominent position in the Fish Policy. The policy addresses various aspects pertinent to shrimp sector e.g., cultivation management, production, quality control, transportation, marketing, export etc.

A.4.3 Environmental aspects and the shrimp cultivation in national fish policy

The Fish Policy acknowledges that production of fish is being hindered by the lack of ecological balance. If the production and management of fish are not conducted in the proper direction, it may adversely affect the environment. Thus, according to the policy among others, the following principles are to be observed:⁵⁰

⁴⁶ Clause 6.9 of the Fish Policy 1998.

⁴⁷ Clause 6.13 of the Fish Policy 1998.

⁴⁸ Clause 9.2.1 of the Fish Policy, 1998.

⁴⁹ Clause 10.1.3 of the Fish Policy, 1998.

⁵⁰ See, Clause 9.10 of the Policy.

- The cultivation of fish and shrimp will not be expanded causing damage to the mangrove forests in coastal areas.
- Bio-diversity will be preserved in natural waters and the sea.
- No such chemical will be used in fish or shrimp cultivation that may affect the environment adversely.
- Environment-friendly technology of fish and shrimp production will be adopted.

This policy aspect requires striking a balance between shrimp cultivation and the environment.

A.4.4 Shrimp cultivation in coastal area - a policy priority of the government

In order to implement, effectively and appropriately, the National Fish Policy emphasizes that four important sub-sectors of the fish sector will be accorded priority. Shrimp cultivation in coastal areas is one such priority. Other supportive policies will also be resorted to for the purpose of the improvement of these sub-sectors.⁵¹ The Policy further states that the strategies for the implementation of these prioritized sub-sectors will include the introduction of shrimp and fish production programme that will be free from the adverse impacts on the coastal environment and will be friendly to the preservation of bio-diversity.⁵²

A.4.5 Ban on fry collection

The Government in 2000 has imposed ban on fry collection to protect other fish species and preserve the biodiversity although its implementation has been temporarily suspended. Implementation of the ban would benefit the hatchery owners, but have significant adverse impacts for both the middle-income and the poor livelihood groups. Women would also be adversely affected to a greater extent than men if the ban was fully implemented, because of the large number of women currently engaged in fry collection.

This conflicts with the National Fish Policy for the introduction of scientific methods, coupled with proper training, to ensure that no other species is endangered while harvesting shrimp fries from the natural sources and that shrimp fries are not damaged while transportation. Neither DoF has the capacity to enforce such prohibition.

Collection of PL from the wild should be treated as an economic asset rather than a cost. Other countries utilize this resource gift. Wild caught supplies support a competitive sector and will also provide an added source of supply particularly where sources are inadequate, or where producers require intermittent supplies in order to reduce their financial liabilities (credit issues). However, explorations of more limited scale prohibitions / seasonal closures, education of fry collectors about the negative impact of their practice, and applying alternative methods and technology that will assist in economically rehabilitating these fry collectors are being thought of.

A.5 OTHER RELEVANT SECTORAL POLICIES

Apart from National Fish policy, there are various sectoral policies that have directly and indirectly bearing on shrimp cultivation. These policies include National Water Policy, National Environment Policy, National Land Use Policy, National Agriculture Policy, and Export Policy. The following paragraphs present the salient features of the policy.

⁵¹ See, Clause 11.1 of the Policy.

⁵² See, Clause 11.1.1 of the Policy.

A.5.1 National water policy, 1998

The National Water Policy strongly recommends integrated and balanced development of the water resources of the country to meet the requirements for economic development, poverty alleviation, food self-sufficiency, public health and security, improved living and protection of the natural ecosystem and biodiversity.

A.5.2 National environment policy, 1995

The Policy suggests environmentally sound water resource management in utilization and development of water resources.⁵³ Activities that cause or result in land salinity and loss of soil fertility have been prohibited.⁵⁴ Compatible land use systems for different ecosystems and environmentally sound management of newly accreted land have been recommended.⁵⁵ The Policy clearly spells out of the necessity of ensuring appropriate environment and development of fisheries⁵⁶ and ensures that development activities in fisheries do not create any adverse impact on the mangrove forests and other ecosystems.⁵⁷

The policy thus has an important bearing on shrimp cultivation. According to this policy, salinity in land can not be increased. There is no denying the fact that the more land falls within the purview of shrimp cultivation, the more salinity in land will increase. This element of the Environment Policy thus conflicts with the Shrimp Mohal Management Policy.

A.5.3 Export policy, 1997-2002

The policy put particular emphasis on promotion of the export of certain goods including shrimps. Although the policy aims at reaching 'internationally acceptable levels' of the export products, it does not make any reference to that this will not lead to shrimp culture causing adverse impact on environment. For example, an expansion of traditional/semi-intensive cultivation of shrimp, as targeted in the Export Policy, could lead to an increase in salinity, which is not allowed under the provisions laid down in the Environmental Policy. Thus these two policies are in conflict with each other in this respect and are vulnerable to misuse.

A.5.4 National land use policy 2001

The National Land Use Policy does not make any reference to shrimp cultivation be it khas or in private land. The Shrimp Mohal Policy 1992 issued by the Ministry of Land lays down the policy of using khas land for shrimp cultivation. The Land Use Policy however, does not in any way contradict with the Shrimp Mohal Policy.

Although lack of land zoning many times causes conflict among the land owners on land use options, nevertheless, the land use policy has not addressed the issue of zoning in the coastal areas on the basis of land topography, tidal inundation, water salinity, soil quality and other environmental factors, with the active participation of local people.

⁵³ See, Clause 3.5.1 of the Environment Policy.

⁵⁴ See, Clause 3.6.2 of the Environment Policy.

⁵⁵ See, Clause 3.6.2 of the Environment Policy.

⁵⁶ See, Clause 3.8.1 of the Environment Policy.

⁵⁷ See, Clause 3.8.3 of the Environment Policy.

A.5.5 Agriculture policy, 1999

The National Agriculture Policy, 1999 aims to ensure, inter alia, sustainable agricultural production, conservation of crop biodiversity, increased use of organic manure, integrated pest management system, efficient irrigation system. The policy appears to take a narrower approach to define 'agriculture' by providing guidelines for development activities related only to crops and by undermining other aspects of modern agriculture like fish. The Agriculture Policy is silent about the need for assessing the impact of the use of agro-chemicals on soil, water bodies, fisheries and overall biodiversity. Another drawback of the policy lies in its emphasis on increased irrigation from surface water sources viz. khals (canals), beels (wetlands) and rivers, without considering its impact on the interest of other water based sectors like fisheries and forestry, while the National Water Policy strongly recommends integration of the uses of water taking into consideration the interest of all users.

A.6 SUMMARY OF FINDINGS

- The existing sub-sectoral policies of the government regarding shrimp culture generally are adequate. Shrimp Sub-sector has been addressed with priority in the National Fish Policy 1998. However there are some inconsistencies on some issues in different sectoral policies, which are vulnerable to confusion and can be abused.
- A number of issues in various sectoral policies relevant to shrimp culture as has been mentioned in the following matrix need harmonization. If any sector is to be given concessions or there is need to strike a balance between sectors, that should be referred to the relevant policies and the exceptions should be clearly spelled out.

Relevant Policies	Issue for Harmonization
The Protection and Conservation of Fish Rules, 1985 rule 8(1A)	Ban on catching fry or post larvae of fish shrimp and prawns which conflicts with National Fish Policy, 1998.
<i>National Environment Policy, 1995</i> and Shrimp Mohal Management Policy 1992	According <i>National Environment Policy, 1995</i> salinity in land cannot be increased. As per Shrimp Mohal Management Policy the more land falls within the purview of shrimp cultivation, the more salinity in land will increase.
<i>Export Policy, 1997-2002</i> and <i>National Environment Policy 1995</i>	An expansion of traditional/semi-intensive cultivation of shrimp, as targeted in the Export Policy, could lead to an increase in salinity, which is not allowed under the provisions laid down in the Environmental Policy.
<i>National Land Use Policy 2001</i>	Zoning in the coastal areas on the basis of land topography, tidal inundation, water salinity, soil quality and other environmental factors, with the active participation of local people.
<i>Agriculture Policy, 1999</i> and <i>National Water Policy, 1998</i>	Inclusion of the provision of addressing the environmental issues against impact of the use of agro-chemicals on soil, water bodies, fisheries and overall biodiversity. Emphasis on single sector (agriculture) use of water in Agricultural Policy, while, the National Water Policy strongly recommends the integration of uses of water taking into consideration the interest of all users.

- There is no policy constraint to address the livelihood issues, protection of wild broods, protection of environment and bio-diversities, adoption of certification for hatcheries and quality control, providing technical and financial support to the farmers. However, the legal regime is inadequate for many things.

- There is lack of efforts to make strategy and action plans to make the opportunities created by the policy frameworks for the livelihood groups in particular. Effective efforts and emphasis are not also visible on framing laws and rules for the Shrimp sub-sector to make use of the opportunities under available policy environment and to make those operative.

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B.1 GENERAL

There is no law⁵⁸ in Bangladesh specifically dealing with shrimp cultivation, farming, management, marketing, processing etc. The only law that has direct bearing on shrimp is the Shrimp Cultivation Tax Act, 1992, which is revenue collection oriented. This does not mean that shrimp is out of the domain of law i.e., there is no law legal regime on shrimp. The law of the land on fish and fisheries in general apply to shrimp. Whatever may be the biological entity of shrimp, so far as the law is concerned shrimp is a fish. The Protection and Conservation of Fish Act, 1950 did not include shrimp or prawn in its definition of fish but it was deemed to have been included. However, the said law was amended and the Protection and Conservation of Fish [Amendment] Ordinance 1982 clearly spells out that fish includes shrimp and prawn. The laws that have direct nexus and bearing on shrimp culture are presented in the following matrix.

Summary overview of shrimp related laws and their relevance and harmonization issues

Relevant laws	Relevance and issue for harmonization	Implementing agency
Private Fisheries Protection Act, 1899	Oldest fish law. Protection of private fisheries and the rights of landowners who don't like to lend their land for shrimp farming.	MoFL, DoF
Forest Act, 1927	Allocation of fish management responsibilities in mangrove areas to the Forest Department (FD). This implies duplication of the tasks and responsibilities of DoF, which special relevance to fish management in the Sundarbans.	MoEF, DoF
The Protection and Conservation of Fish Act, 1950	Protection and conservation of fish and fisheries, allowing the government to frame rules.	MoFL, DoF
The Government Fisheries Protection Ordinance, 1959	Protection of government khas water bodies against unauthorized fishing.	MoFL, DoF
The Fish and Fish Products (Inspection and Quality Control) Ordinance, 1983	Empowerment of government for inspection and quality control through separate rules, such as the <i>Fish and Fish Products (Inspection and Quality Control) Rules, 1997</i> . This rule empowers officers and sets licensing systems for processing and export.	MoFL, DoF
Marine Fisheries Ordinance, 1983 (MFO)	Regulation of licensing, gears and areas of fishing. Relevant for protection of mother shrimp. Jurisdiction is limited from the 18.29m depth line to the limit of territorial waters. This thus excludes shallow waters where fry catching occurs. The ordinance prescribes mesh sizes for different gears, defines the need for fishing licenses when not registered under any other law (as most ships are registered with the Dept. of Shipping, this rule is by-passed) and facilitates the declaration of marine reserve area.	MoFL, DoF
The Protection and Conservation of Fish Rules, 1985 Amended rule 8(1A), 2000	Ban on catching fry or post larvae of fish shrimp and prawns. Last amendment in 2000 when rule 8(1A) was added which conflicts with National Fish Policy, 1998. Rules conflict with the Embankment and Drainage Act, 1952, that needs to modify the provision that "construction of bunds, weirs, dams and embankments in or across the rivers, canals, khals or beels are prohibited in general and can only be constructed for irrigation, flood control or drainage" – to include the purpose of "water supply in shrimp gher".	MoFL, DoF MoEF
The Shrimp Cultivation Tax Act, 1992	Establishes rules for tax on land used for shrimp cultivation with Water Development Board in an appraising role for fixing tax rates.	BWDB
The Environment Conservation	Provision for environmental clearance. Revision is needed to	MoEF, DoE

⁵⁸ That is Act, Ordinance and Presidential Order.

Relevant laws	Relevance and issue for harmonization	Implementing agency
Act, 1995 and Elaborated Environment Protection Rules, 1995	avoid that ship breaking industry is cleared under the guise of re-rolling mills.	
Fish and Fish Products (Inspection and Quality Control) Rules, 1997	Lays down detailed procedures for inspection and quality control of fish and fish products during transportation, processing and export as well as empowers officers to implement the rules.	MoFL, DoF
Registration of shrimp gher/farm, 1998	Keeping records of shrimp farms.	Div/Dt/UZ Committees- 1998.

The above laws can be categorized in two ways, i.e., Laws on inland fisheries and that of Marine Fisheries. The other categorization would be protection of private fisheries and protection of government fisheries. This chapter discusses the above laws and their implications for shrimp culture.

B.2 THE PRIVATE FISHERIES PROTECTION ACT, 1889

This Act is the oldest of all laws that is prevalent in the fish sector. Its purpose is to protect private fisheries.⁵⁹ It basically provides for penalty provisions if any person fishes in any private waters not having a right to fish therein or erects, places maintains or uses, or puts, or knowingly permits to be put, therein any matter for the purpose of catching or destroying fish without the permission of the person to whom the right of fishery belongs.⁶⁰ However, whoever violates the above is punishable with fine

About 91 percent of the total area, in which shrimp cultivation is carried out, belong to private sector. Thus, this law has an important bearing on the protection of the rights of the landowners who don't like to lend their land for Shrimp farming; but this is in conflict with the Shrimp Mohal Policy which authorizes the government to declare an area as shrimp jolmohal.

B.3 THE FOREST ACT, 1927

This Act has an important relevance to the fish sector in general as well as the Shrimp sub-sector. Fisheries in the mangrove forests are managed by the Forest Department (FD) as per the provisions enunciated in the Forest Act, 1927. The Sunderbans is a reserve forest under Section 3 and 4 of the Fisheries Act, 1927. The entire forest including the water bodies is within their domain. Accordingly, the FD manage the fish and fisheries in the Sunderbans area and issues permits for catching shrimp fry in such water bodies. By this FD whose main mandate is about Forestry, is doing the job of DoF whose main job is to do fishery. This brings a duplication of activities by DF with the activities of DOF.

⁵⁹ See, Preamble of the Act.

⁶⁰ See, section 3 of the Act.

B.4 THE PROTECTION AND CONSERVATION OF FISH ACT 1950

This law has been passed with a view to ensuring protection and conservation of fish in Bangladesh.⁶¹ The protection and conservation of shrimp needless to say is a matter of prime priority especially this being an exportable item.

B.4.1 Definition of fishery and the place of shrimp gher

It has been already mentioned that there are various legislation on fish. But until 1995, there was no definition of fishery in any of the legal text. The Protection and Conservation of Fish Act, 1950 as amended in 1995⁶² added a new section (1a), which has laid down the definition of fishery. This reads as follows:

Fishery means any water body, natural or artificial, open or closed, flowing or stagnant [such as⁶³ river, haor, baor, beel, flood plain, canal etc.⁶⁴] where activities for growing fish or for conservation, breeding, exploitation or disposal, of fish or living organism related to such activities are undertaken, but does not include an artificial aquarium of fish used as a decorative article, pond or tank.

The above definition refers fishery to be any water body that may be (a) artificial or natural (b) open or closed and (c) flowing or stagnant. The definition by way of example mentions some water bodies and carefully excludes gher. This does not mean that shrimp gher is outside the purview of the definition of fishery. This is more so because of the use of the words 'such as' and 'etc.', indicating that the list is not exhaustive. However, one can argue that 'gher' ought to have been mentioned in the definition. It is also important to note that pond and tank have been excluded from the definition and the word hatchery has also not been included.

B.4.2 Government's rule making power under the Act and its bearing on shrimp cultivation

The 1950 Fish Act does not as such contain provisions on conservation and protection of fish, it rather by section 3 empowers the government to frame Rules to this end. According to section 3, government may, by Rule –

- a. prohibit or regulate all or any of the following matters, that is to say,
 - i. erection and use of fixed engines;
 - ii. construction, temporary or permanent, of wires, dams, bunds, embankments and other structures;
 - iii. use or method of operation of any kind of fishing net and size of the mesh of any fishing net;
 - iv. manufacturing, import, marketing, carrying, transporting or processing of such fishing nets, traps, gears and other contrivances as may be specified in the rules;
- b. prohibit the destruction of or any attempt to destroy fishes by explosives, gun, bow and arrow in inland water or within coastal territorial waters;
- c. prohibit the destruction of or any attempt to destroy fishes by poisoning of water or the depletion of fishes by pollution, by trade effluent or otherwise;

⁶¹ See, Preamble of the Act.

⁶² The Protection and Conservation of Fish [Amendment] Act, 1995.

⁶³ Italic for emphasis.

⁶⁴ Italic for emphasis.

- d. prescribe the seasons during which the killing or catching of fishes of any prescribed species shall be prohibited;
- e. prescribe a minimum size below which no fish of any prescribed species, shall be killed or sold;
- f. prohibit all fishing in all waters or in any specified period;
- g. prohibit the destruction of or any attempt to destroy fishes by drying or de-watering of any fishery.

Even though the Act was passed in 1950, no Rule under section 3 was framed until 1985. The Protection and Conservation of Fish Rules, 1985 framed under the Protection and Conservation of Fish Act, 1950, prohibits erecting of fixed engines in the rivers, canals, khals and beels,⁶⁵ prohibits destruction of fish by explosives, guns, bow and arrow in inland water and coastal territorial waters,⁶⁶ prohibits destruction of fish by poisoning of water,⁶⁷ and prohibits catching and destruction of certain fish during certain period.⁶⁸ The said rules apart from conservation and protection of fish do address environmental aspects.

Rule 4 deals with prohibition of constructing bunds, weirs, dams and embankments in the following manner:

No person shall construct bunds, weirs, dams and embankments or any other structure whether temporary or permanent, in or across or over the rivers, canals, khals or beels for any purpose other than irrigation, flood control or drainage.

From the above it is evident that construction of bunds, weirs, dams and embankments in or across the rivers, canals, khals or beels are prohibited in general and can only be constructed for irrigation, flood control or drainage and does not include the purpose of water supply in shrimp gher. These conflicts with the Shrimp Cultivation Taxation Act 18992 described later.

The Protection and Conservation of Fish Rules, 1985 has been amended since framed, the last being in 2000. This amendment has inserted a new rule after rule 8(1). The new rule 8(1A) reads as follows “no person shall catch or cause to be caught fry or post larvae of fish shrimp and prawns of any kind, in any way in the estuary and coastal waters of Bangladesh”. The object of such ban is to stop the destructiveness presently associated with fry catching, which is throwing away the other species of shrimp fry, fish and zooplankton on the banks of water bodies after separating the fry of tiger shrimp.

B.4.3 Penalties for breach of rules

Breach of the above rules is punishable with rigorous imprisonment for a term, which may extend from one month to six months and also fines that may extend to one thousand taka. Whoever, having convicted of an offence under the Act and rules made there under, shall on every subsequent conviction be punishable with rigorous imprisonment for a term which shall not be less than two months and may extend to one year, and also with fine which may extend to two thousand taka. Generally speaking, these penalty clauses are seldom resorted, as in most cases the violations of the Act and rules do not result in prosecution.

The perception of a section of the local people, as has been reflected in the Focus Group Discussion (FGD), is that the breaches are generally made by the rich and the elites who can influence the proceedings of such action process. So there has been no instance of imposition of penalty.

⁶⁵ See, Rule 3 of the Protection and Conservation of Fish Rules, 1985

⁶⁶ See, Rule 5 of the Protection and Conservation of Fish Rules, 1985

⁶⁷ See, Rule 6 of the Protection and Conservation of Fish Rules, 1985

⁶⁸ See, Rule 7 of the Protection and Conservation of Fish Rules, 1985

B.5 THE GOVERNMENT FISHERIES (PROTECTION) ACT, 1959

This Act has been promulgated to make provisions for preventing unauthorized fishing in the fisheries belonging to or under the management and control of the government. Section 3 of the Act deals with declaration of a fishery to be khas managed fishery. Once a fishery has been declared, khas managed fishery according to section 4 no person would be allowed to fish in such a fishery without a valid license for fishing. Contravention of any provision of this Ordinance is punishable with imprisonment, which may extend to two years, or with fine, which may extend to 5000 taka or with both.

B.6 THE MARINE FISHERIES ORDINANCE, 1983

The Marine Fisheries Ordinance of 1983 (MFO) is used to regulate certain fishery-related activities of coastal fishing like the issuance of licenses, gear regulation and area of fishing. This Ordinance has an important bearing on the protection of mother shrimp.

According to section 28 of the Ordinance, government may declare any area of the Bangladesh fisheries water and as appropriate, any adjunct and surrounding land, to be marine reserves where, among others it considers that special measures are necessary to protect and preserve the natural breeding grounds and habitats of aquatic life. On 29 October 2000, the government has declared four places in the Bay of Bengal, which are under the territorial water of Bangladesh to be marine reserve areas with a view to ensuring safe breeding of fish and shrimp. Any person who in any marine reserve (a) fishes or attempts to fish (b) degrades, extracts sand or gravel, discharges or deposits waste or any other polluting matter, or in any other way disturbs, alters or destroys fish or other natural breeding grounds or habitats and (c) constructs or erects any buildings or other structures on or over any land or waters within such reserve, shall be guilty of an offence and be liable to fine not exceeding taka one lac.

Rule 14 of the Marine Fisheries Rules prescribes the mesh size of different types of nets to be used by the fishing vessels. The rule mentions about five types of nets, namely, shrimp trawl net (boom), fish trawl net, large mesh drift net, small mesh drift net and set bag net. Also, specified are areas where such nets are to be used for fishing operations. In spite of this Rule, there are few more types of nets outside of the purview of this rule are being used - although one or two of such types have been found to be severely destructive from the perspective of sustainable management of the coastal fishery resource as well as shrimp.

Whereas it is a requirement under the MFO to obtain a fishing license for operating a fishing vessel, this can easily be ignored under another provision of the MFO, which exempts local fishing vessels from this requirement if they obtain registration or valid certificate under any other existing law. Since all vessels have to register with the Department of Shipping for obtaining certificate of seaworthiness, it is very easy for the owners to bypass the DOF altogether and not to obtain any fishing license at all.

However, the jurisdiction of application of this Ordinance for coastal fishing is, by the definition, limited from an 18.29m depth line of the coastal waters to the limits of territorial sea. This definition excludes the shallow areas between the coastlines and the 18.29m-depth-line where much of destructive fishing practices including fry catching are carried out.

B.7 THE SHRIMP CULTIVATION TAX ACT, 1992

It has been already mentioned that Shrimp Cultivation Tax is the only law which solely deals with shrimp. The Act in Section 3 declares that it will prevail notwithstanding anything contained in any

other law that is in force for the time being. Thus, this Act supersedes all other existing laws to the contrary. Section 4, dealing with the imposition of tax, provides in Sub-Section (1) that if the government is satisfied that any land has been benefited by virtue of any embankment erected, any canal cut, or any water-controlling structure built by the government, the Government can forthwith declare such area as 'notified area' and may declare its intention to impose tax on such land in accordance with the rate mentioned in such notification. According to the proviso, the proposed rate of tax imposed on a notified land may be more or less than that of any other notified land. Sub-Section (2), however, provides a safeguard to such imposition by stating that any person having an interest in such notified land may, within 30 days of the publication of the notification, prefer, in writing, an objection against the inclusion of his land in such notification. According to Sub-Section (3), the government, then, considering such objection filed within the specified time may, by government notification, either (a) revoke the decision to impose tax, or (b) may confirm the imposition of tax with respect to the whole or any part of such notified land.

Section 5, with regard to the determination and collection of the tax, provides in Sub-Section (1) that as soon as the final notification has been published, in pursuance to Section (4)(3)(b), confirming the decision to impose tax, the government official, to be specified in the Rules, will determine the amount of tax for the notified lands. According to Sub-Section (2), the owners of such land will be apprised by the Water Development Board of the amount payable as tax by means of a preliminary public notice. Sub-Section (3) specifies that such notice will be posted in any conspicuous place of the notified land and it will mention the time-limit for preferring objection against the tax-amount specified in the preliminary notice. The Water Development Board will, then, according to Sub-Section (4), consider such objections, filed within the time-limit, and will determine the rate of tax finally. Sub-Section (5) states that the government official, specified in this behalf under the Rules, will issue notice to the owner of the land calling upon him to pay the determined amount of tax within a specified time. The tax will be collected by the official and in the manner to be specified in the Rules. Sub-Section (7) provides that any land owner who pays the tax within the time specified in the notice will be entitled to a rebate at a rate fixed by the government. According to Sub-Section (7), if any land owner fails to pay the tax within the date specified in the notice issued under Sub-Section (5), he will be liable to pay an annual interest at a rate, to be fixed by the Government, with respect to the unpaid tax.

Section 6 of the Act states that the owner of the concerned land will be responsible for the payment of the tax, notwithstanding anything contained in any other law, practice, custom or contract, for the time being in force. However, if tax is imposed on any land jointly owned by more than one person, the tax will be payable by the person who enjoys the benefit of the land which he may, (a) deduct before sharing the income from the land; or (b) exact in such a manner as if the tax-payee owed the amount to him as loan.

In pursuance of section 9 of the Shrimp Cultivation Act, 1992, Shrimp Cultivation Tax Rules 1993 was adopted. Rule 3 provides that after the intention to impose tax in any notified area is declared, any person having an interest in any land in that area may, if he so wish, prefer objection, within the time mentioned in Section 4(2) of the Act, in Form "A" and submit the same to the Superintending Engineer of the Water Development Board for the concerned area.

According to Rule 4, after the final notification has been issued under Section 4(3)(b), the Executive Engineer of the Water Development Board for the notified area will determine the tax for such area on a preliminary basis. Rule 5 states that the Executive Engineer will then issue a notice to the land-owner, in accordance with Form "B", calling upon him to pay the tax that has been determined finally within a period of 30 days after receiving the notice.

Rule 6, Sub-Rule (4), provides that if the land-owner pays the tax within the time specified in the notice issued by the Executive Engineer, he will be entitled to a rebate at a rate of ten percent with

respect to the tax-amount, and on the contrary, if he fails to pay the tax within such time, he will be liable to pay an interest at a rate of fifteen percent per annum with respect to the unpaid tax.

B.8 THE ENVIRONMENT CONSERVATION ACT, 1995

The Environment Conservation Act of 1995 has provision for obtaining environmental clearance [Section 12, Environment Conservation Act of 1995] to conduct hazardous operation like ship breaking, pollution by oil spills, bilge and sewage disposal etc., but its operation is practically absent. There is as such no legal instrument that regulates the ship breaking operations which have been taking place on river banks for a quite considerable period. Many entrepreneurs involved in ship breaking avoid the rules of clearance by the DoE under the guise of re-rolling mills. The Environment Conservation Act of 1995 needs to be revised so that it can retrospectively take effect against existing polluting industries and this should be done without delay

B.9 FISH AND FISH PRODUCTS [INSPECTION AND QUALITY CONTROL] RULES, 1997 UNDER FISH AND FISH PRODUCTS [INSPECTION AND QUALITY CONTROL] ORDINANCE 1983

The Fish and Fish Products [Inspection and Quality Control] Ordinance, 1983 has been promulgated to provide for inspection and quality control of fish and fish products. The Ordinance does not as such elaborate on the inspection and quality control aspects of fish and fish products but section 3 of the Ordinance empowers the government to make such rules as appear to be necessary or expedient for ensuring the quality of fish and fish products for export. Such Rules may include the following matters namely:

- a. prescribing grades, quality and standard of fish and fish products;
- b. regulating catching, handling and marketing of fish and fish products;
- c. processing, storing, grading, packing, marketing, transporting of fish and fish products;
- d. prescribing the quality and specifications for the containers of fish and fish products and the marketing and inspection of such containers;
- e. requiring the registration of fish processing and fish packing plant and establishment for freezing, processing, and preservation of fish and fish product;
- f. requiring the licensing of persons dealing with freezing, processing, and preservation of fish and fish product;
- g. prescribing the fees for registration of fish processing and fish plant and establishment and for issue of licenses and inspection of laboratory analysis of fish and fish products samples.

Operation of fish processing and fish packing plant and establishment has been prohibited without obtaining license from the government.⁶⁹ The Ordinance in section 15 has empowered the government to frame rules and accordingly in 1997, the Fish and Fish Product [Inspection and Quality Control] Rules have been framed which lays down detail procedures. The following paragraphs elaborate on that.

⁶⁹ See, section 7.

B.9.1 Officers empowered to implement the rules

Rule 3 of the Fish and Fish Products [Inspection and Quality Control] Rules, 1997 designates as 'empowered officers' under the Rules, all officials who are not below the status of Deputy Director of the Fish Inspection and Quality Control Division of the Fish Directorate, with an exception that the Deputy Director can assign, in writing, any subordinate official, not below the status of Inspector, with the responsibilities of functioning as, and to exercise the powers of, an empowered officer for a period not exceeding three months.

B.9.2 Processing and export of fish/shrimp

Rule 4, dealing with the processing and export of fish, provides that no person can, without any license to do so, process or export fish, nor can he supply, accumulate or market fish with a view to exporting the same. If anybody contravenes this provision, his fish will be liable to be seized by any empowered officer or any inspector, and he will be liable to a fine, which may extend to ten thousand taka. The fish can, however, be restored to such person after the fine has been appropriated. Sub-Rule (3) of Rule 4 states that any person must not process and export any unhygienic, decomposed or contaminated fish, nor must he send such fish to anybody nor receive such fish from anybody with a view to processing or exporting the same. This provision, however, does not apply in case of the receipt of any fish, which was exported earlier and was sent back to Bangladesh. Any person acting in contravention of this provision will be liable to a fine not exceeding twenty thousand taka and such fish will be liable to be seized on spot.

Rule 5 stipulates that if anybody does not have a processing factory managed according to the quality control standards enunciated in Schedule 9, he will not be issued any license for processing fish for the purpose of whole-sale supply or sale to any domestic market or export to the international market. The government may, however, relax any of the conditions in Schedule 9, if appropriate, for granting license for export of fish in the international market. It further provides that no ingredient or chemical element or container should be used in processing fish, which may damage the quality of the fish or may contaminate or decompose it. Unauthorized use of such element will render the license of processing liable to be cancelled. There is also a bar in the Rule against the unauthorized application of DDT or other toxic insecticide to dried fish or any other processed fish. Contravention of this provision leads to a fine not exceeding ten thousand taka and also to seizure of such fish. Similarly a person who uses, while processing, transporting, selling, accumulating or marketing fish, any element which is not suitable for being used in any food product, will be liable to a fine not exceeding ten thousand taka and his license will be liable to be cancelled.

B.9.3 Special provisions on transportation of fish, depot, service centre, arat and ice plant

Rule 6 lays down that in case of transportation of fish, the conditions laid down in Schedule 5 have to be complied with. Similarly, in case of depot, service centre and *arat* of fish, Schedules 6 and 7, and in case of ice plants, Schedule 8 must be complied with⁷⁰.

⁷⁰ A total of ten Schedules have been attached to the Rules which elaborately deal with different dimensions of quality control and standard management of fish and fish product. Schedule 1 deals with the facilities and conditions that a fish processing factory must, respectively, provide and fulfill. Schedule 2 lays down the conditions that must be observed in running a fish-processing factory. Schedule 3 enunciates the facilities that must be ensured by a fish processing plant on board a vessel and the conditions that must be fulfilled in running the same. Schedule 4 deals with the facilities and conditions applicable for *cured* fish processing plant. Schedule 5 lists the conditions applicable to vehicles used for the transportation of fish. Schedule 6 lays down the facilities required for fish depots, service centers and *arats*, while Schedule 7 lists

B.9.4 Scope of inspection

Rule 9 states that any inspector shall be empowered to inspect, at any logical time, any fish processing factory and its premises, the fish kept in such factory, any place used for keeping fish, fish trawler, any vehicle used for fish transportation, fish depot, service centre, *arat*, fish cultivation farm, the process of the treatment of fish, cartons and containers used for packaging processed fish and papers concerning HASAP, with a view to ascertaining whether the provisions of the Rules are being observed properly.

B.9.5 Application for license and cancellation of license

Rule 14 deals with the application for license. Rule 16, dealing with the cancellation of license, stipulates that if any licensee contravenes any provision of the Ordinance or the Rules, any empowered officer can cancel his license on recording, in writing, the reasons for so doing. According to Sub-Rule (2), such empowered officer, however, shall, before canceling the license, issue a notice to the licensee stating the reasons for which he intends to cancel the license and shall call upon the licensee to submit written statement, if any, within a period of seven days after receiving the notice. If any such written statement is submitted in response to the notice, the empowered officer, within a period of ten days, or if no such statement is submitted, within a period of fifteen days after the expiry of the time mentioned in the notice, shall cancel the license after considering the whole circumstances and shall record the reasons for so doing, or shall pass any other decision or direction in writing and shall communicate the same to the licensee. However, when an empowered officer is satisfied, by a report from an inspector or otherwise, that there has been a serious infection in any fish product accumulated in any processing factory, or any adulteration has been administered, or any fraud or forgery has been committed, or any information has been unlawfully concealed, or any serious circumstance has arisen because of any contravention of the Ordinance or Rules, which calls for immediate banning of all, or any special function of such factory, he may, notwithstanding the provisions in Sub-Rule (2), suspend the license of such factory without showing any reason.

B.10 SUMMARY OF FINDINGS

- With the exception of the Shrimp Cultivation Tax Act, 1992, the laws on or concerning shrimp are the laws on fish and fisheries.
- The Conservation and Protection of Fish Act, 1950, is protection and conservation of fish resources oriented and not production or management oriented. However, one may question - is there any necessity for having a law on production and management of shrimp, or, should it be left to the producers. This law is applicable to both private and government sector.
- The Private Fisheries Protection Act 1899 is to protect the right of fishery [land] owners against unauthorized fishing and is punishment oriented, while the Government Fisheries [Protection] Act, 1959 is to protect the fisheries owned by government from unauthorized use and is also punishment oriented. Both these Acts have relevance to shrimp culture, although not mentioned specifically. The Private Fisheries Protection Act 1899 law has an important bearing on the protection of the rights of the landowners who don't like to lend their land for Shrimp farming; but is in conflict with the Shrimp Mohal Policy, which authorizes the government to declare an area as shrimp jolmohal.

the conditions for running them. Schedule 8 contains the facilities and conditions applicable to ice plants. Schedule 9 enunciates the conditions for implementing HASAP-based quality control programme.

- The Marine Fisheries Ordinance, 1983 has an important bearing on the protection of mother shrimp. In pursuance to section 28 of the Ordinance, the government has declared four places in the Bay of Bengal, which are under the territorial water of Bangladesh to be marine reserve areas with a view to ensuring safe breeding of fish and shrimp.
- The Fish and Fish Products [Inspection and Quality Control], Ordinance 1983 prohibits establishment and operation of fish processing and fish packing plant without obtaining license from the government;⁷¹ and, provides provisions for inspection and quality control of fish and fish products. In pursuance to Section 15 of the Ordinance the government has framed rules [Fish and Fish Product - Inspection and Quality Control Rules, 1997] which lays down detail procedures for inspection and quality control of fish and fish products during transportation, processing and export as well as empowerment of officers to implement the Rules.
- Implementation of the laws is of utmost importance and priority for quality control, rather than promulgation of new laws for the development and management of the shrimp sub-sector.

The following Laws need to be harmonized/ modified to avoid confusion.

Relevant Laws	Issue for Harmonization
Private Fisheries Protection Act 1899	Protects the rights of landowners who don't like to lend their land for Shrimp farming; but is in conflict with the Shrimp Mohal Policy which authorizes the government to declare an area- irrespective of whether it is government or privately owned - as shrimp jolmohal.
Forest Act, 1927	To rectify duplication of activities by DF with the activities of DOF in the Reserve forest of the Sunderbans.
The Protection and Conservation of Fish Rules, 1985 rule 8(1A)	Ban on catching fry or post larvae of fish shrimp and prawns which conflicts with National Fish Policy, 1998.
Marine Fisheries Ordinance of 1983 (MFO)	To bring all the destructive nets under the purview of Rule 14 for sustainable management of the coastal fishery resource as well as shrimp.
	So that owners of sea-going vessels can not bypass the need for obtaining fishing license from DOF or MoF under the guise of registering with the Department of Shipping for obtaining certificate of sea-worthiness.
	To include the area between the coast line and the 18.29 m depth line of the coastal waters within the jurisdiction of this Ordinance.
The Environment Conservation Act of 1995	To give retrospective effect of the Act against existing polluting industries.
	Legal instrument is needed to regulate the ship breaking operations.
	So that any entrepreneur involved in ship breaking can not avoid the rules of clearance by the DoE under the guise of re-rolling mills.
Protection and Conservation of Fish Rules, 1985; And, The Embankment and Drainage Act, 1952.	To modify the provision that "construction of bunds, weirs, dams and embankments in or across the rivers, canals, khals or beels are prohibited in general and can only be constructed for irrigation, flood control or drainage" – to include the purpose of "water supply in shrimp gher".

Schedule 10 lays down the quality standards for drinking water and related conditions.

⁷¹ See, section 7.

APPENDIX-C : INSTITUTIONAL ARRANGEMENTS

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C.1 GENERAL

As had been the case with the shrimp policies, prior to the adoption of Fish Policy, institutional arrangements for the management of shrimp culture were taken from time to time on ad-hoc basis to implement the policy decisions. This chapter discusses the institutional arrangements for the implementation of the policies in connection with the Shrimp sub-sector in general and the livelihood policies in particular.

C.2 TRACKING THE INSTITUTIONAL ARRANGEMENTS

C.2.1 An overview

Status of formation of various committees, as per decisions of the government and recommendations in Policies at different times, and their working period have been presented below, which have been detailed in the subsequent paragraphs:

Overview of government committees in the shrimp sector

Committees	Status	Working period
A. Committees formed before the National Fish Policy (1998)		
Shrimp Cultivation Regulation Committees (1986) at division, district and upazila levels	Formed	Feb.'86 – Dec.'97
Cabinet Division Sub-committee on Shrimp Cultivation Management and Export headed by the Industries Minister (1991)	„	Jan.'91 – Sep. '98
National Shrimp Mohal Management Committee headed by the Minister of Land (1992)	„	Mar.'92 – to date
Shrimp Management Committee (1994) at divisional, district and upazila levels	„	Jan.'94 – Jan.'98
Development and Management of Shrimp Resource Committees (1998) at division, district and upazila levels	„	Jan.'98 – to date
Central Shrimp Cell at Matsya Bhaban	„	Mar.'94 – to date
B. Committees recommended in the National Fish Policy (1998)		
National Committee on Fish and Shrimp headed by Hon'ble Prime Minister	„	Mar.'98
Executive Committee of National Committee on Fish and Shrimp headed by the Minister for Fisheries and Livestock	„	Mar.'98
Shrimp Cells at field level	Not yet formed	

C.2.2 Shrimp cultivation regulation committees

The 3-Tier Shrimp Cultivation Regulation Committees at Divisional, District and Upazila levels were the first of its kind set by the Ministry of Fisheries and Livestock by a notification dated 15 February 1986, according to a decision of inter-ministerial meeting for the management of shrimp culture in Khulna region. The major tasks of these Committees were to facilitate Shrimp farming and resolution of the conflict between the Shrimp farmers and the rice farmers. These Committees functioned more at the Upazila and the District levels, and existed till January 1998.

C.2.3 Cabinet division sub-committee on shrimp cultivation management and export

In January 1991, the Cabinet Division Sub-committee on Shrimp Cultivation Management and Export headed by the Industries Minister was established primarily to facilitate export of Shrimp and functioned till 3 September 1998.⁷²

C.2.4 Shrimp mohal management committees

The Shrimp Mohal Policy recommended a 2-tier management system through the formation of a National Committee and District Committees for managing the Shrimp Mohal area.

According to Clause 1 of the Policy the National Shrimp Mohal Management Committee headed by the Minister of Land consists of thirteen members.⁷³ The responsibilities of this committee include: (a) formulation of national policy on shrimp mohal management (b) undertaking necessary measures for expansion of shrimp cultivation and increase production (c) engage in inter-ministerial coordination (d) recommending allocation of land for shrimp cultivation and (e) recommending laws regarding shrimp mohal management. The policy recommended at least one meeting to be held in every six months.

According to Clause 2 of the policy the District Shrimp Mohal Committees were to be formed only in the concerned districts i.e., districts having land for shrimp cultivation. Each District Committee headed by the Deputy Commissioner is comprised of six members⁷⁴ and two advisors.⁷⁵ The task of the Committee included: (a) identification of new land suitable for shrimp cultivation (b) recommend those for declaration as shrimp Mohal to the ministry of land through the office of the divisional commissioner. The committee was required to sit at least once in two months.⁷⁶

The scope of the work of the committees is indicative of the fact that while the District Committee is entrusted to identify suitable land to be declared as Shrimp Mohal and related works, the National Committee is the apex body to look into the overall development of shrimp sector.

These Committees acted as and when necessity arose but not on a regular basis as has been mentioned in the Policy.

⁷² This Committee was dissolved by Clause 2 of the Notification dated 1 January 1998 issued by the Cabinet Division.

⁷³ The members are: three members of Parliament belonging to Shrimp Mohal Area nominated by the government, Secretary of the Ministry of Land, Secretary of the Ministry of Fisheries and Livestock, Secretary of the Ministry of Forest and Environment, Secretary of the Ministry of Irrigation Water and Flood Control, Commissioner of Chittagong division, Commissioner of Khulna division, two shrimp farmer nominated by the government and the Joint Secretary of the Ministry of Land as member secretary of the committee.

⁷⁴ Divisional Forest Officer, Executive Engineer of Water Board, District Fisheries Officer, two shrimp cultivators nominated by the government and ADC (Revenue).

⁷⁵ Two members of Parliament nominated by the Ministry and where appropriate Mayor of the City Corporation.

⁷⁶ It needs to be mentioned that the District Committee under the Shrimp Management Policy has been dissolved/ repealed by a subsequent Cabinet Division notification issued on 1 January 1998. For details see, below.

C.2.5 Committees on shrimp management -1994

An inter-ministerial meeting in the Cabinet Division in September 1993 was held for ‘reviewing and coordinating activities of the committees, under different Ministries, relating to production, marketing and export of shrimp’ and in January, 1994, by a Notification issued by the Cabinet Division, District Administration Branch-4 of the Office of the Prime Minister and published in Bangladesh Gazette on 27 January, 1994 a 3-tier management system – at Divisional, District and Thana levels – was introduced.⁷⁷

These Committees were treated as supplementary committees to the National Shrimp Mohal Committee setup by the Shrimp Mohal Policy of 1992.⁷⁸ Interestingly, the District Shrimp Mohal Committee, which was set up under the Shrimp Mohal Management Policy, 1992 was not dissolved until January 1998.

The Divisional Committee was to be headed by the Divisional Commissioner, Chittagong/Khulna/Barisal and consisted of 8 members⁷⁹. The Mayor in the Metropolitan Areas was to act as advisor to the Committee. The activities of the committee included:

1. To identify areas suitable for shrimp cultivation, protect the interests of small farmers, prevent coastal erosion, preserve embankments, control salinity in shrimp *gher*, and to compensate paddy cultivators who sustained loss caused by saline water.
2. To provide guidance in the functioning of the District and Thana Committees.
3. To ensure implementation of the Shrimp Cultivation Tax Act, 1992.
4. To ensure security of shrimp *gher*.

The District Committee, comprising 8 members⁸⁰, was headed by the Deputy Commissioner. The Chairman of the Municipality in areas other than metropolitan areas was designated as the advisor to the Committee. The activities of the Committee were to perform similar tasks as the Divisional Committee at the District level, with an added task of giving permission, under Bangladesh Irrigation Water Rate Ordinance, 1983, to *gher*-owners for erecting ‘sluice gate’ on water streams, in accordance with the measurement and design approved by the Water Development Board, and for cutting essential portion of embankments.

The Thana Committee was to be headed by the Thana Nirbahi Officer and consisted of 6 members⁸¹. The Chairmen of the concerned Union Councils were to act as advisors to the Committee. The activities of this Committee were similar to the District Committee at Thana level.:

These Committees set up in 1994 were dissolved⁸² and reconstituted as Development and Management of Shrimp Resource Committees in January 1998.

⁷⁷ It is evident that Committees on shrimp existed prior to 1994.

⁷⁸ See, Clause 5 of the Cabinet Division Notification dated 1 January 1998.

⁷⁹ Members were: Deputy Inspector General of Police, Superintending/Executive Engineer of the Water Development Board, Divisional Forest Officer, Additional Director/Representative of Agricultural Extension Department, two shrimp cultivators to be nominated by the Divisional Commissioner, Deputy Commissioner of Concerned District and Deputy Director of Fish Directorate, as member-secretary.

⁸⁰ Members were: Superintendent of Police, Divisional Forest Officer/representative, Executive Engineer, O&M Division, Water Development Board/representative, Deputy Director of Agricultural Extension Department, two shrimp cultivators to be nominated by the Deputy Commissioner, Thana Nirbahi Officer, and District Fisheries Officer, as member-secretary.

⁸¹ The members were: Officer in Charge of the Police Station, Deputy Divisional Engineer, O&M Division of Water Development Board, Thana Agriculture Officer, Range Forest Officer, Assistant Commissioner (Land Revenue Officer) and Thana Fisheries Officer as member-secretary.

C.2.6 Development and management of shrimp resource committees - 1998

The District Shrimp Mohal Committee setup under the Shrimp Mohal Management Policy of 1992 was dissolved by clause 2 of the Cabinet Division notification dated 1 January 1998, following a decision of inter-ministerial meeting held in October 1997 to reassess and reorganize various Committees on shrimp farming, marketing and export formed by various ministries/divisions. By the same Notification, Committees on Development and Management of Shrimp Resource were set up at Divisional, District and Upazila levels, and were entrusted to carry out the function of the District Shrimp Mohal Committee i.e., initiate the process of declaration khas land as Shrimp Mohal.

The following paragraphs elaborate the composition and functions of the Development and Management of Shrimp Resource Committees.

C.2.6.1 Divisional committee on development and management of shrimp resource

The Divisional Shrimp Resource Development and Management Committee headed by the Divisional Commissioner consists of 13 members.⁸³ Scope of work of this Committee includes:

1. To identify all sorts of *khas* land, closed canals/rivers, coastal *char* areas etc., that are fit for shrimp cultivation, and to appraise, and refer to the Land Ministry, any recommendation for declaring Shrimp *mohal* by the District Committee.
2. To protect the interests of small farmers, prevent coastal erosion, preserve the embankments, conserve the environment, control salinity in shrimp *gher*, ensure adequate water supply and drainage in shrimp *gher*/farm and provide assistance in infrastructure development.
3. To protect the interest of the owners of lands adjacent to Shrimp *gher*/farm.
4. To give necessary directions to the functioning of the District and Thana Committees.
5. To ensure implementation of the Shrimp Cultivation Tax Act, 1992.
6. To resolve any matter referred to by the District Committee and also to decide as to any allegations brought against the District Committee and to hear appeals relating to such allegations.
7. To form, if felt necessary, a Special Committee to be headed by Additional Commissioner (Revenue) and to consist of Fish/Shrimp specialist, representative of shrimp farmers associations [*Bagda and Galda*], District Fisheries Officer and ADC (Revenue) of the concerned District. This special Committee shall submit report to the Divisional Committee after carrying out on spot inspection and investigation in the shrimp *mohals*, all kinds of *khas* land, *char* areas or enclosed canals suitable for shrimp cultivation etc.

In September 1998 the Cabinet Division reviewed the activities regarding declaration of khas land as Shrimp Estate and dropped from the functions of the Committee. Further, new members have been included in the Committee as advisors – the Minister in charge of the district concerned and one Member of Parliament from the concerned district.

⁸² See, Notification issued by the Cabinet Division of the government dated 1 January 1998.

⁸³ The members are: DIG police, ADC (Rev), DC (Dist.), Superintending Engineer/Executive Engineer (BWDB), Director/Dy. Director (DoE), Conservator of Forest, Additional Director/ Representative (DAE Division), Dy. Director (Fish Quality Control), District FO, 2 representatives of Shrimp Farmers Association.

C.2.6.2 District committee on development and management of shrimp resource

The District Shrimp Resource Development and Management Committee headed by the Deputy Commissioner consists of 13 members.⁸⁴ The scope of the work of this Committee is similar to those of the Divisional Committee with the inclusion of the following:

1. To render every cooperation in identifying all sorts of governmental/semi-governmental *khas* lands, closed canals/rivers, coastal *char* areas, shrimp *mohal* etc., that are fit for shrimp cultivation; to examine, appraise, and refer to the Divisional Committee, any recommendation put forward by the Thana Committee for declaring any such identified land as Shrimp *Mohal*; to examine, appraise, and refer to the Divisional Committee, any recommendation put forward by the Thana Committee for granting long-term lease to competent fish/shrimp farmer, or trader, or institution in order to increase the production of shrimp, and pursuant to the policy/ provision enunciated in the circular of the Land Ministry [Bhumi/Sh-8/Chingri/227/91/217], dated 30.3.92.
2. To give permission, according to Bangladesh Irrigation Water Rate Ordinance, 1983, for the erection of gate at the source of *gher*/farm, for closing or cutting any essential part of dams.
3. To finally approve the updated list of shrimp *gher*/farm put forward by the Thana Committee.
4. To provide assistance to the concerned department in ensuring that the approved depot owners are implementing the laws and policies for controlling the quality of fish/shrimp.

By a notification issued by the Cabinet Division on 3 September 1998, new members have been included in the Committee as advisors, i.e., Minister in charge of the district concerned and two Member of Parliament from the concerned district.

C.2.6.3 Thana committee on development and management of shrimp resource

The Thana Shrimp Resource Development and Management Committee headed by the Thana Nirbahi Officer consists of 10 members.⁸⁵ The scope of the work of this Committee is similar to those of the District Committee with the inclusion of the following:

1. To carry out on spot inspection in all sorts of governmental/semi-governmental *khas* lands, closed canals/rivers, coastal *char* areas, shrimp *mohal* etc., that are fit for shrimp cultivation; to identify, after consulting the concerned files of the revenue department, such lands as may be declared Shrimp *Mohal* and to refer recommendations to such effect to the District Committee; to receive application, in accordance with the policy/provision declared by the national committee formed by the Land Ministry with the view to increasing the production of shrimp, and, after examination and appraisal of such applications, in accordance with the policy/provisions applicable to granting such lease and in the light of the practical scenario, to immediately forward these to the District Committee along with appropriate recommendation/opinion.

⁸⁴ The members are: SP, ADC, DFO, Deputy Director of agriculture extension division, TNO, Executive engineer of BRDB, Inspector nominated by the Director/Deputy Director of the Department of Environment, one representative of the Deputy Director of Fish Quality Control, Thana Fisheries Officer two nominated Shrimp Farmers, and District Fisheries Officer.

⁸⁵ The members are: ADC (land), OC of thana, Thana Agriculture Officer, Forest Range Officer, Sub-divisional Engineer of Water Board, Inspector nominated by the Director/Deputy Director of the Department of Environment, two nominated shrimp farmer, one representative from Bangladesh Frozen Food Exporters Association, and Thana Fisheries Officer.

2. To prepare updated list of all Shrimp *gher*/farms and to send the same to the District Committee. The list should contain the particulars [*Mauja*, *Khatian*, Plot No., and quantum of land] of the land included in the shrimp *gher*/farm, trade-name and address of the *gher*/farm etc.

The above functions of the Committee have been reviewed by the Cabinet Division on 3 September 1998 and the activities regarding declaration of khas land as Shrimp Estate have been dropped. Further, one Member of Parliament from the concerned district shall be in the committee as advisor.

The activities of these Committees in Divisional, District and Thana Levels were also reformulated. While the activities of the Committees were enhanced in 1998, some of the apparently important activities of the Committees formed in 1994 were omitted, for example, the power to compensate the paddy cultivators sustaining loss caused by salinity of water, to issue license for shrimp cultivation and determine land-rent. No justification was offered for the exclusion of these powers from the 1998 Committees, and therefore, it remains highly contentious as to whether the need for compensating the aggrieved paddy-cultivators has ceased to exist while it is obvious and evident that more paddy-lands are coming under the scope of shrimp cultivation causing loss to paddy-cultivators in a larger number.

C.2.7 Establishment of shrimp cell

With the view to ensuring proper management of shrimp production and carrying out related activities, a central Shrimp Cell was established, by an office order dated 12 March, 94, under the administrative control of the Fisheries and Livestock Ministry. The Cell comprised of nine members, most of whom are support staff⁸⁶ and is to work under the supervision of the Director and executive control of an Additional Director of the Fish Directorate.

The activities of the Cell, according to that office order, are:

- a. To preserve all information relating to shrimp in Bangladesh and activities concerning shrimp.
- b. To render assistance and provide guidance in formulating shrimp projects, obtaining loan and carrying out other activities regarding shrimp cultivation.
- c. To undertake necessary activities in order to devise appropriate technology required for the introduction of modern shrimp cultivation in the country, and to supply required ingredients.
- d. To establish communication with concerned agencies and to take appropriate measures in order to arrange electricity in concerned areas required to introduce semi-intensive shrimp production.
- e. To take necessary steps for coordinating and monitoring various activities relating to shrimp cultivation under Fisheries Directorate.
- f. To undertake programs regarding financing, in accordance with directions from appropriate authorities, and other related issues, with a view to establishing sufficient number of shrimp hatcheries/nurseries in the country.
- g. To take up necessary programs, in accordance with the appropriate directions of the authority, for motivating the shrimp-cultivators in the production of shrimp, and for making available to themselves necessary components and technology.
- h. To preserve information regarding the export of shrimp.
- i. To perform any other functions in this behalf as may be assigned to it by any appropriate authority of the Fisheries and Livestock Ministry and the interim inter-ministerial advisory committee.

⁸⁶ One Expert Officer, two Cell Officers, two Cell Assistants, two typists/shorthand typists, two MLSS

The office of the Cell is located in a room of the Matsya Bhaban. The office orders provided that the activities of the Cell would be initiated, for the time being, by involving officials from the Fish Directorate and different projects under it. The necessary office appliances and stationery for the Cell were to be supplied from the Fish Directorate.

Although the Fish Policy, 1998 mentions that the activities of the shrimp cell will be expanded to field level, no such initiative has been taken to date. Further, the cell does not seem to be equipped to deal with task as required. However, the cell is yet to meet the expectation of all the stakeholders and much remains to be done.

C.2.8 Proposed institutional arrangements in the fish policy

The National Fish Policy highlights the institutional aspect of the fish sector and vests the overall responsibility of the sector to the Ministry of Fisheries and Livestock in the following manner:⁸⁷

- The responsibilities of overall improvement and management of fish and fish habitats will be vested with the Fisheries and Livestock Ministry. The Land Ministry will also be involved in order to take effective measure in this regard.
- The concerned ministry/directorate will, if necessary, be reorganized and strengthened so as to make the coordination between drafting of fish improvement plans at the national level, reviewing the past activities and other fish related activities more fruitful.
- An inter-ministerial committee will be formed in order to ensure proper use of government *khas jolmohal* in the fish sector.
- Coordination will be established among various governmental, autonomous, non-governmental and voluntary organizations involved with various activities in the fish sector.

The policy appears to be taking a holistic approach in the management of fish sector, which is of utmost necessity and a matter priority for the development of the sector.

C.2.9 Coordination measures to implement fish policy

For successful implementation, the Policy recommends the establishment of two Committees with a view to developing and managing the fish resource. These are: a National Fish Council headed by the Prime Minister and its Executive Committee headed by the Minister for Fisheries and Livestock.⁸⁸ For the purpose of implementation the Policy specifies that coordination will be established among the concerned ministries, divisions, agencies and departments, including the Land Ministry, Local Government, Rural Development and Cooperatives Ministry, Agriculture Ministry, Forest and Environment Ministry, Water Resource Ministry and Youth and Sports Ministry.⁸⁹

C.2.10 Institutions at local level in shrimp areas

Government

The national government is represented at the local level through officials of different Ministries and Departments. They function at the district and the Upazila levels within the chain of their own

⁸⁷ See, Clause 9 of the Policy.

⁸⁸ See, Clause 11.2 of the Policy. The literal English translation of the terms used in the National Policy, 1998 is National Committee on Fish Related Issues. However, to make it simple, we have translated it as National Fish Council which equally embraces the same meaning.

⁸⁹ See, Clause 11.4 of the Policy.

organization and are linked vertically. Extension staffs of some Departments like DAE, BWDB, Social welfare, Health and Family Planning etc. operate below the Upazila level. However, this is not the de jure government. In public perception, they are the de facto government. As the shrimp sector is concerned, officials from department of Fisheries are there at district and Upazila level. They don't have any extension services at village or shrimp farm level. There are also committees at District and Upazila level which are represented by departmental officials and stakeholders other than the DoF and Administration officials. Besides the setup of national government at local level, there exists the Union Parishad, which is the lowest unit of Local Government Institutions.

Civil Society

NGOs are the most organized civil society organizations that operate almost in every nook and corner. Their main thrusts are advocacy, social mobilization, human development and poverty alleviation. They mostly work with a target group approach, addressing most of their programs to the poor and women. Besides, there are many NGO-prototype civil society formations and associations, like forum of women, journalists, teachers, medical practitioners, legal practitioners, etc. They function as advocacy groups, and mainly in an ad hoc manner. However, role of NGOs in the activity chain of shrimp cultivation, processing and marketing is limited. Their involvement is rather peripheral encompassing relevant associated concerns due to the shrimp sectors activities; for example, the environmental concern, the livelihood of the shrimp fry collectors, effect on the existing social safety network, use of coercive method in shrimp farming etc. However, they look at the issues more from one particular view rather than a holistic view.

Local Functional Organization

These organizations are developed to manage and maintain specific local initiatives. Among these are water management committees, school management committees, bazaar committees, etc. These are occasionally sponsored by government projects or NGOs. These organizations are relevant to the shrimp areas particularly for Golda cultivation in the west coast in particular. KJDRP project driven Water management Associations in the Beel Dakatia area in the Khulna –Jessore district has relevance to Golda cultivation, as the water management in the area is a clear determinant of the sustainability of the Golda production. The Water Management Associations can play an important role in initiating Community Based Management for Golda culture in these areas.

Community Based Organizations

There is a wide range of CBOs operating at the grass roots level. Among these are landless groups, women's groups, farmers' cooperatives, fishers' cooperatives, Resource management Organizations etc. that are organized at a micro level. These are mostly village-based. In the development literature, these are often termed as NGO groups or BRDB groups, which is indicative of their respective promoter. These organizations have no role in the shrimp areas. These organizations also can play an important role in initiating Community Based Management for Golda culture in these areas.

Private Sector

The Shrimp sub-sector is driven by the private sector which is very crucial for its sustainability. The community of entrepreneurs, traders and various livelihood groups, but not the fry collectors, is being organized in different organizations and forums to pursue their respective group interests. The exporters association, shrimp farm owners association, processors association, hatchery owners association already exists. The Hatchery Owners Association is very influential. The shrimp farmers association at Upazila level has been formed at a few shrimp Upazilas and some are at forming

stage. However, the process is yet to start in majority of the Upazilas. The informal institutions although formed to take care of their interests, nevertheless, can play and do play important role in capital mobilization, employment generation, revenue collection. The NGOs can play an important role to organize the various livelihood groups to form their Associations for the overall benefit of shrimp culture management.

C.2.11 Summary and assessment

It appears from the preceding discussion that the government always appreciated the importance of the Shrimp sub-sector and has taken many initiatives from time to time taking its changing dimensions and formed various committees.

Ministries other than Ministry of Fisheries and Livestock had been in the forefront in the arena of Management of shrimp culture and industry. It has been noticed that the major players have been Ministry of Land, Ministry of Industries, Cabinet Division. The National Fish Policy however clearly spelled out that the Fisheries and Livestock Ministry has been vested with the responsibilities of overall improvement and management of fish and fish habitats, which include Shrimp.

The efforts to manage the shrimp culture by forming various committees at different times, no doubt, made important contributions. Nevertheless set up of a distinct institutional set up for the management of the Shrimp sub-sector did not come up till the establishment of the Central Shrimp Cell, which again does not seem to be the institution good enough for the management of this so vital sub-sector. There is an imbalance in the tasks assigned to this Cell and the institutional capacity of this Cell. Moreover, contrary to the recommendation of the National Fish Policy, the Shrimp Cell has not been extended to the field level.

C.3 MAJOR QUESTIONS ON INSTITUTIONAL ARRANGEMENTS

The previous chapters gave a resume of the institutional regime since shrimp culture became an important livelihood. Now the relevant questions are –

- Are the existing institutional arrangements adequate for smooth management of the Shrimp sub-sector and to address the livelihoods issues?
- If 'No' – why?
- What can be done?

C.3.1 On the existing arrangements

The existing institutional arrangements include the following:

- a. National Committee on Fish and Shrimp headed by Hon'ble Prime Minister, which is operative since March, 1998.
- b. Executive Committee of the National Committee on Fish and Shrimp headed by Hon'ble Minister for Fisheries and Livestock, which is operative since March, 1998.
- c. Committees for Development and Management of Shrimp Resource [1998] at Division, District and Upazila levels which are operative from January, 1998.
- d. Central Shrimp Cell at Matsya Bhaban, which areis operative from March, 1994.
- e. MoFL as the regulating Ministry and DoF as the implementing agency.

C.3.2 Examining the question of adequacy

The criteria for examining the adequacy of the existing institutional arrangements are whether they can perform the following tasks to meet the requirement:

- a. Harmonization of Policy and Plan
- b. Implementation of policies, activities and co-ordination.
- c. Monitoring and feed back to the policy/decision makers, planners and implementers

Harmonization of Policy and Plan

The following are the government ministries and agencies directly or indirectly relevant to shrimp culture and the industry.

Ministry and Agency	Relevance to Shrimp Culture – direct and indirect
Ministry of Land Department of Land Record and Surveys	<ul style="list-style-type: none"> Leasing of Land Zoning of Shrimp Areas
Ministry of Environment and Forest Department of Environment Forest Department	<ul style="list-style-type: none"> Licensing of shrimp culture in the Sundarbans mangrove area Environment and Pollution
Ministry of Fisheries and Livestock Department of Fisheries	<ul style="list-style-type: none"> Regulating and management of Shrimp sub-sector
Local Government Division Local Government Engineering Department	<ul style="list-style-type: none"> Construction of infrastructure for shrimp fields Involvement of LGIs in Shrimp policy formulation and management
Ministry of Shipping and Port Coast Guard	<ul style="list-style-type: none"> Licensing of sea-going vessels Deployment of Coast Guard
Ministry of Water Resources Water Resources Planning Organization Bangladesh Water Development Board	<ul style="list-style-type: none"> Construction of infrastructure for shrimp fields Water provision for shrimp fields
Ministry of Agriculture Department of Agricultural Extension	<ul style="list-style-type: none"> Deployment of DAE field staff for Shrimp Extension Services
Ministry of Industries Export Promotion Bureau	<ul style="list-style-type: none"> Export and import of Shrimp and Shrimp -related products and implements
Ministry of Youth and Sports	<ul style="list-style-type: none"> Leasing of land

Harmonization of policies has to be at a very high level and can best be done in the National Committee on Fish and Shrimp headed by the Hon'ble Prime Minister and in its Executive Committee (Executive Committee of National Committee on Fish and Shrimp) headed by Hon'ble Minister for Fisheries and Livestock, as has been recommended in Section 11.2 of the National Fish Policy, 1998.

The National Committee on Fish and Shrimp includes the Ministers for Local Government, Rural Development and Cooperatives Ministry, Water Resources, Commerce and Industries, Agriculture and Food, Forest and Environment Ministry, Land Ministry; Secretaries of the Ministries of Finance (Finance Division, Banking Division), Industries, Member (Agriculture) - Planning Commission, Vice-Chairman – Export Promotion Bureau, DG-DOF, President – BFCCI, President – Bangladesh Frozen Food Export Association, President – Marine Fisheries Association, President - National Shrimp Farmers Association, President – National Fishermen's Cooperative Association Ltd, Chairperson – ADAB. Secretary, MoFL is the Member-Secretary.

Executive Committee of the National Committee on Fish and Shrimp includes the Secretaries of the Ministries of Agriculture, Commerce, Power, Energy & Minerals, Banking Division, Forest and Environment, Industries, Fisheries & Livestock, Land, Representative of Bangladesh Bank, DG-Bangladesh Water Development Board, Executive Chairman – BRRC, DG – Fisheries Research Institute, Chairman, Bangladesh Fisheries Development Corporation, President – Bangladesh Frozen Food Export Association, President - National Shrimp Farmers Association. DG – DoF is the Member-Secretary.

Any decision taken in these committees will have the participation and ownership of all the concerned Ministries and stakeholders as well as endorsement of the highest Executive.

The MoFL and DoF are to take initiative for activating the National Fish Council and its Executive Committee to its requirement.

Implementation of Policies, Plans and Co-ordination

Although regulatory control of the implementation of shrimp related policies, plans and initiation of co-ordination is the responsibility of the Ministry of Fishery and Livestock, the Department of Fisheries, as the principal institution for the management and development of fish resources in Bangladesh bears the real responsibility for their implementation. The implementing agencies should be let the opportunity to deliver the goods and answer to the National Committee on Fish and Shrimp and its Executive Committee, instead of setting up committee(s) which generally dissipates the responsibility.

In this respect the institutional capacity of DoF for the management of shrimp culture and implementation of shrimp related policy decisions and the planned activities is extremely crucial. [PDO-ICZMP, 2001] broadly discussed the institutional deficiencies of DoF. Richard Banks [2002] has made a number of proposals for institutional reform within DoF.

The DOF was first created in 1908 in the province of Bengal and earned the status of a department in 1971. Its functions has been widened from time to time and consist of collection of data on fisheries, planning, implementation, monitoring and evaluation, enforcement of Laws and Regulations, protection and conservation, management and development of fish resources. The DOF derives most of its scope of activities from the different laws enacted over the years.

The Department is headed by a Director General who is supported by two Directors; there are three Principal Scientific Officers equivalent to Director who are assigned special jobs. The Department has a total sanctioned strength of 4425 officials and staff. The scope of the Department is divided in two broad lines of activities - Inland Fisheries and Marine Fisheries.

The Director of Inland Fisheries is in charge of administration, finance, training, fish culture and extension activities and management of field outfit. The inland fisheries activities are spread all over the country and are carried out by the field outfit of the Department. The field establishment consists of 6 Deputy Directors at the divisional level, 64 District Fisheries Officers at the districts and 456 Thana Fishery Officers (TFO) at the thana level. The TFOs are in charge of extension activities within their jurisdiction in addition to carrying out other regulatory and managerial functions. The coastal areas including the shrimp farming areas are under the jurisdiction of Director of Inland Fisheries, although the coastal area consists of both inland and marine waters, and all types of fishing activities are conducted here.

The Director of Marine Fisheries is responsible for protection, preservation and development of marine resources and related survey work. Out of a total of 4425 officers and staff, only 181 is allocated to the Marine side. The staff of the Marine office is supposed to control the catches and conduct of fishing vessels.

It is interesting to note that in spite of the immense importance which it attached to Shrimp sub-sector, and has taken various policy and institutional initiatives from time to time taking the changing dimensions into consideration, but those have not been reflected in the institutional arrangements. There is not yet any specific wing or organizational framework in DoF for this sub-sector except the Central Shrimp Cell at Matsya Bhavan.

The Central Shrimp Cell formed to render support services to shrimp culture and its management is comprised of One Expert Officer, two Cell Officers, two Cell Assistants, two typists/shorthand typists, two MLSS, and is to work under the supervision of the Director and executive control of an Additional Director of the Fish Directorate is too inadequate for such an important foreign exchange earning sub-sector. No surprise that the Central Shrimp Cell obviously fall far short of stakeholders' expectation. This Cell does not have any executive or administrative authority and consequently has turned to an information collection Cell. Although the National Fish Policy, 1998 recommended to extend the Central Shrimp Cell to field level, it has not been implemented. Anyway, that would also have not met the requirement.

The staff of the Marine office, which is supposed to control the catches and conduct of fishing vessels and is extremely important for the protection and sustainability of mother shrimps, cannot supervise and exercise their control over the marine area physically.

In view of the importance of the Shrimp sub-sector which provides 86% of the foreign currency earning of the fish sector, it is logical and justified that the DoF should have a strong Shrimp Wing, under a Director or an Equivalent Position, with an organizational frame work – a defined hierarchal structure and definite job descriptions – from the proposed Director level down to the field level.

DoF does not have the capacity to enforce the legal provisions entrusted to it for conservation and protection of the sea fish resources including the mother shrimps due to, primarily, lack of required manpower trained in sea-patrolling and lack of logistics including sea-going vessels. Moreover, civilian officials cannot do patrolling the sea and the high seas. So, the responsibility of enforcement of laws in the coastal waters and the sea may be given to the Coast Guard by making suitable amendments in the relevant laws [PDO-ICZMP, 2001].

The Coast Guard (CG) is an agency to guard the coastal waters that virtually live on the sea and the law has also conferred them the necessary police powers to carry out effective patrolling. Their duties and responsibilities include preventing illegal fishing within the territorial waters of Bangladesh and unauthorized intrusion into and exit from Bangladesh through its territorial waters. The main problem in a full-fledged launch of the CG may be financial constraints. About a dozen government agencies are trying to cope with enforcement of legal provisions under different laws. At individual agency level, the allocation is highly inadequate; but great economies of scale can easily be achieved if this task is assigned to a single specialized agency like the CG by pulling these scanty resources together [PDO-ICZMP, 2001].

Regarding the technical capacity, DoF has the knowledge and has accumulated experience in shrimp culture. Motivation and commitment at field level in most cases are there but they need training. Fisheries Training Academy at Savar (Dhaka) and the Marine Fisheries Academy in Chittagong are the two training institutes for training and development of human resources for fisheries. However there is no specific training program for the DoF staff and the livelihood groups in the shrimp culture chain. Lack of adequate budget allocation to operate the training programs is a generic problem. The staff working for the shrimp sub-sector, with emphasis on the extension workers, should be trained with job-to-do oriented tailor-made training modules – as well as in problem solving ability, communication skills and empathy – with orientation towards the poor livelihood groups. Professional support for capacity building under TA programs will be useful.

Inter-agency co-ordination

Usually the shrimp projects involve agencies like DoF, BWDB, MoL and LGED, Forest Department etc. Inter-agency co-ordination and co-operation is crucial for successful implementation of any multi-dimensional policy and project, not to speak of shrimp only, as well as implementation of activities under the Annual Development Plan. Such co-ordination among the partners' ministries/agencies for project implementation is necessary at three levels –

- Ministry level for steering and facilitating through formation and activation of a Steering Committee, which should meet once in three months, and, as and when necessary. This Committee's main responsibility should be harmonization of the plan, if required; monitoring of implementation of the plan activities, and facilitating co-ordination at lower levels. Secretary of the lead ministry should be the Convener and Project Director should be the Member - Secretary of the Committee.
- Project management level for planning and facilitating through the set up of a Project Management Office (PMO), which should meet once in two months and as and when necessary. Main responsibility of the PMO should be to co-ordinate and monitor among the partner agencies including development partners if any, take initiative in matters to promote and facilitate the project activities at the field level viz- preparation/revision and submission of PPs, placement of funds to the field offices, etc.
- Field level for actual implementation of the project activities and should meet once a month and as and when necessary.

The above concept is already working in many projects including the Fourth Fisheries Project under DoF in Khulna. The co-ordination is working well among the offices of BWDB, LGED, Land, Forestry, LGIs and the local administration in Char Development and Settlement Project (CDSP) in Noakhali.

The field level co-ordination for normal ADP activities are done well in the monthly meetings of the District Co-ordination Committee and District Development Committee which is chaired by the designated Hon'ble Minister and attended by the concerned Members of Parliament.

The performance of the Divisional, District, and Upazila level committees for Development and Management of Shrimp Resource [1998] came up during the Focus Group Discussion (FGD). Contrary to the popular belief, it was revealed from the records as well as in the FGD that the committees at the district and upazila levels perform as and when required, particularly to resolve performance; the main reason, as has been understood, is the communication gap between these committees and the stakeholders. However these committees don't function on routine basis and can not address all their ToR responsibilities. One important thing to note is that these committees by character are coordinating bodies and not executing agencies. Moreover, they are entrusted with so many important tasks which need routine actions-process and it is debatable whether a co-ordination body can perform those tasks. Moreover there are defined agencies with regular staff to do the tasks assigned the co-ordination committees. For example, the Divisional, District and Upazila Committees have been entrusted with the task to "ensure implementation of the Shrimp Cultivation Tax Act, 1992". The three Committees at three levels can't do the same "ensuring" job. Again, how can they "ensure"? Moreover there is definite arrangement to collect the Tax and only they can "ensure". The Co-ordination Committees can only discuss and make recommendations/decisions to be implemented by the concerned agencies.

Again, these committees at upazila, district, and divisional levels are usually headed by the concerned Upazila Nirbahi Officer, Deputy Commissioner and the Divisional Commissioner, who are the busiest officers in their jurisdiction struggling to match their own day-to-day routine

activities. They have to go by daily priorities and attend daily emergencies. Situation with other members, barring may be a few, are, more or less the same.

Now the question - should they be the Head of the committees? There is no straightforward answer. Both the answers – Yes and No - has advantages and disadvantages and that's the dilemma. On the one hand, DC and UNO being the Heads of the district and the upazila are in a better position to ensure co-ordination and support the implementing agencies; on the other hand, they are too busy. From all practical considerations, DC and UNO heading the committees, with the District and the Upazila Fishery Officers as Member-Secretaries of the respective Committees, should be a useful co-coordinating arrangement for specific tasks. The District Fishery Officer and the Thana Fishery Officer have to play their key role to drive the committees and make use of the DC and UNO as Head of their committees.

Monitoring

Monitoring of the implementation of policies and feedback to the policy/decision makers, planners and implementers is an extremely crucial element in the management cycle. Presently there is no system of effective monitoring and evaluation of the implementation of the Shrimp-related policies, decisions, activities and projects. Instead of going for any new arrangement, the present Central Shrimp Cell may do the monitoring job and may be put under the Director General DoF, to keep it independent of the Shrimp Wing. The People in the Monitoring Unit need to know what information they have to monitor [information format], from whom [source] and how [procedure] they have to receive the data and information; what they will do with those information [use]. It is very much necessary to establish a management information system and operate for shrimp culture/industry. The Dhaka and the field offices need to be equipped with e-mail, fax and computers the necessary soft and hardware. Establishment of such a monitoring system will require professional and financial support to DoF.

Conflict Management structures

The most common type of shrimp related conflict revolves around lease deeds. Non-payment, delayed payment or payment in installments of lease money is widespread. The shrimp related conflicts are dealt by the District Shrimp Resource Development and Management Committee headed by the Deputy Commissioner at the district level and the Thana Shrimp Resource Development and Management Committee headed by the Thana Nirbahi Officer at the Upazila level. This mechanism, however has not replaced traditional *shalish* systems. Still the simple and the small conflicts are resolved at the local level. Even for complicated and big conflicts, people first try to settle those at the local level through intermediaries - relatives, friends, local influential, local government public representatives, union councils depending on the persons involved. If nothing works or the parties involved are not satisfied then they go to the government set mechanism at the Upazila and District levels.

In a skewed society like Bangladesh, absolute justice cannot be expected. Nevertheless, within the prevailing social context the traditional local *shalish* system is a useful mechanism for conflict resolution at local level. However, the government agency officers enjoy a non-partisan image to the people in general. That's why to avoid the influence of any vested group over the local level *shalish*, the district and thana Shrimp Resource Development and Management Committees were entrusted with the role of arbitration for conflicts. These mechanisms are working more or less satisfactorily; although, the existing conflict resolution structures are sometimes accused of favoring the rich and well-connected people.

Public-Private Partnership

Private sector participation and public–private partnership has been in the forefront in the fish sector, particularly in the shrimp sub-sector in conducting shrimp and prawns aquaculture; landing, handling, storage, processing, transporting and exporting frozen food; making the country self sufficient in Bagda shrimp fry production, operating the air transportation system for carrying shrimp fry from Cox’s Bazar to Jessore. The private owners are conducting 95% of the industrial trawl fishery [PDO-ICZMP, 2001].

In view of the important role already played by the private sector and the limitations of the government agencies to perform with the required efficiency, the development and management of the shrimp sub-sector including quality control and certification, training of the livelihood groups in the shrimp chain, extension works etc. should be made more and more open to private sector – government playing the facilitating and regulatory roles.

C.3.3 Institutional arrangements at local level

Government

The national government is represented at the local level through officials of different Ministries and Departments. They function at the district and the Upazila levels within the chain of their own organization and are linked vertically. Extension staffs of some Departments like DAE, BWDB, Social welfare, Health and Family Planning etc. operate below the Upazila level. However, this is not the *de jure* government. In public perception, they are the *de facto* government. In relation to the shrimp sub-sector, the co-ordination committees are at district and upazila levels, which are represented by departmental officials and stakeholders other than those from the DoF and general Administration. Officials from department of Fisheries are there at district and upazila level. They don’t have any extension services at union or shrimp farm level. Besides the setup of national government, there exists the Union Parishad, which is the lowest unit of Local Government Institutions at local level.

Civil Society

NGOs are the most organized civil society organizations that operate almost in every nook and corner. Their main thrusts are advocacy, social mobilization, human development and poverty alleviation. They mostly work with a target group approach, addressing most of their programs to the poor and women. Besides, there are many NGO-prototype civil society formations and associations, like forum of women, journalists, teachers, medical practitioners, legal practitioners, etc. They function as advocacy groups, and mainly in an *ad hoc* manner. However, role of NGOs in the activity chain of shrimp cultivation, processing and marketing is limited. Recently, a few NGOs have come forward to train fry collectors and shrimp and prawn farmers although in a limited number. Their involvement is rather peripheral encompassing relevant associated concerns due to the shrimp sectors activities; for example, the environmental concern, the livelihood of the shrimp fry collectors, effect on the existing social safety network, use of coercive method in shrimp farming etc. They look at the issues more from one particular direction rather than taking a holistic view.

Local Functional Organization

These organizations are developed to manage and maintain specific local initiatives. Among these are water management committees, school management committees, bazaar committees, etc. Some of these are occasionally sponsored by government projects or NGOs.

Community Based Organization (CBO)

There is a wide range of CBOs operating at the grass roots level. Among these are landless groups, women's groups, farmers' cooperatives, fishers' cooperatives, and resource management organizations etc. that are organized at a micro level. These are mostly village-based. In the development literature, these are often termed as NGO groups or BRDB groups, which is indicative of their respective promoter. These organizations can play an important role in initiating Community Based Management for shrimp culture.

Informal Institutions

The Shrimp sub-sector is driven by the private sector which is very crucial. The informal institutions like the exporters association, processors association, and hatchery owners association play important roles and can be a communication bridge between the government and the stakeholders. They may also play an important role in capital mobilization, employment generation and revenue collection. At the local level, the shrimp farmers association at Upazila level has been formed in a few shrimp upazilas under the FFP and others are at formation stage. There is hardly any informal institution for other livelihood groups, particularly the poor ones. NGOs can be used to form such informal institutions to support the management of shrimp culture at local level.

C.3.4 Summary of findings

- The government always appreciated the importance of the Shrimp sub-sector and formed various committees for the management of shrimp from time to time taking its changing dimensions into consideration.
- As opposed to the popular perception that the various on shrimp development and management do not function, it has been revealed from the records that these committees do function. It has been evident from the Focused Group Discussion also. However, It is noted that there is gap between the shrimp farmers and the officials at field level
- it has been noticed the major players in frame the shrimp policies and its management have been Ministry of Land, Ministry of Industries, Cabinet Division. The National Fish Policy clearly spelled out that the Fisheries and Livestock Ministry has been vested with the responsibilities of overall improvement and management of fish and fish habitats, which include Shrimp.
- The efforts to manage the shrimp culture by forming various committees at different times, no doubt, made important contributions. Nevertheless set up of a distinct institutional set up for the management of the Shrimp sub-sector did not come up till the establishment of the Central Shrimp Cell, which again does not seem to be the institution good enough for the management of this so vital sub-sector. There is an imbalance in the tasks assigned to this Cell and the institutional capacity of this Cell. Moreover, contrary to the recommendation of the National Fish Policy, the Shrimp Cell has not been extended to the field level.
- It is necessary that the National Committee on Fish and Shrimp and its Executive Committee operate on regular basis.
- Harmonization of policies has to be at a very high level and can best be done in the National Committee on Fish and Shrimp and its Executive Committee.
- In view of the importance of the Shrimp sub-sector which provides 86% of the foreign currency earning of the fish sector, it is logical and justified that the DoF should have a strong Shrimp Wing, under a Director or an Equivalent Position, with an organizational frame work – a defined

hierarchal structure and definite job descriptions – from the proposed Director level down to the field level.

- DoF does not have the capacity to enforce the legal provisions entrusted to it for conservation and protection of the sea fish resources including the mother shrimps. The responsibility of enforcement of laws in the coastal waters and the sea may be given to the Coast Guard by making suitable amendments in the relevant laws.
- The staff working for the shrimp sub-sector, with emphasis on the extension workers, should be trained with job-to-do oriented tailor-made training modules – as well as in problem solving ability, communication skills and empathy – with orientation towards the poor livelihood groups. Professional support for capacity building under TA programs will be useful.
- Co-ordination among the partners' ministries/agencies for project implementation is necessary at three levels –
 - ◊ Ministry level for steering and facilitating through formation and activation of a Steering Committee, which should meet once in three months, and, as and when necessary. This Committee's main responsibility should be harmonization of the plan, if required; monitoring of implementation of the plan activities, and facilitating co-ordination at lower levels. Secretary of the lead ministry should be the Convener and Project Director should be the Member - Secretary of the Committee.
 - ◊ Project management level for planning and facilitating through the set up of a Project Management Office (PMO), which should meet once in two months and as and when necessary. Main responsibility of the PMO should be to co-ordinate and monitor among the partner agencies including development partners if any, take initiative in matters to promote and facilitate the project activities at the field level viz- preparation/revision and submission of PPs, placement of funds to the field offices, etc.
 - ◊ Field level for actual implementation of the project activities and should meet once a month and as and when necessary. Such collaboration is very important at the operation level and should not be a problem with the support of top-level management.
- The present Central Shrimp Cell may do the monitoring job and should be put under the Director General DoF, to keep it independent of the Shrimp Wing. Establishment of such a monitoring system will require professional and financial support to DoF.
- The existing mechanisms of district and thana Shrimp Resource Development and Management Committees, and the local level traditional *shalish* are working more or less satisfactorily; although, the existing conflict resolution structures are sometimes accused of favoring the rich and well-connected people.
- The development and management of the shrimp sub-sector including quality control and certification, training of the livelihood groups in the shrimp chain, extension works etc. should be made more and more open to private sector – government playing the facilitating and regulatory roles.
- The *informal institutions* like the Shrimp Farmers Association, *local functional organizations* like the Water Management Associations, *Community Based Organizations (CBO)* like the landless groups, women's groups, farmers' cooperatives, fishers' cooperatives can play important role in initiating Community Based Management for shrimp culture, as well as build the communication bridge between the government and the stakeholders. NGOs can play important role to form such informal institutions to support the management of shrimp culture at local level.