

# Department Of Fisheries

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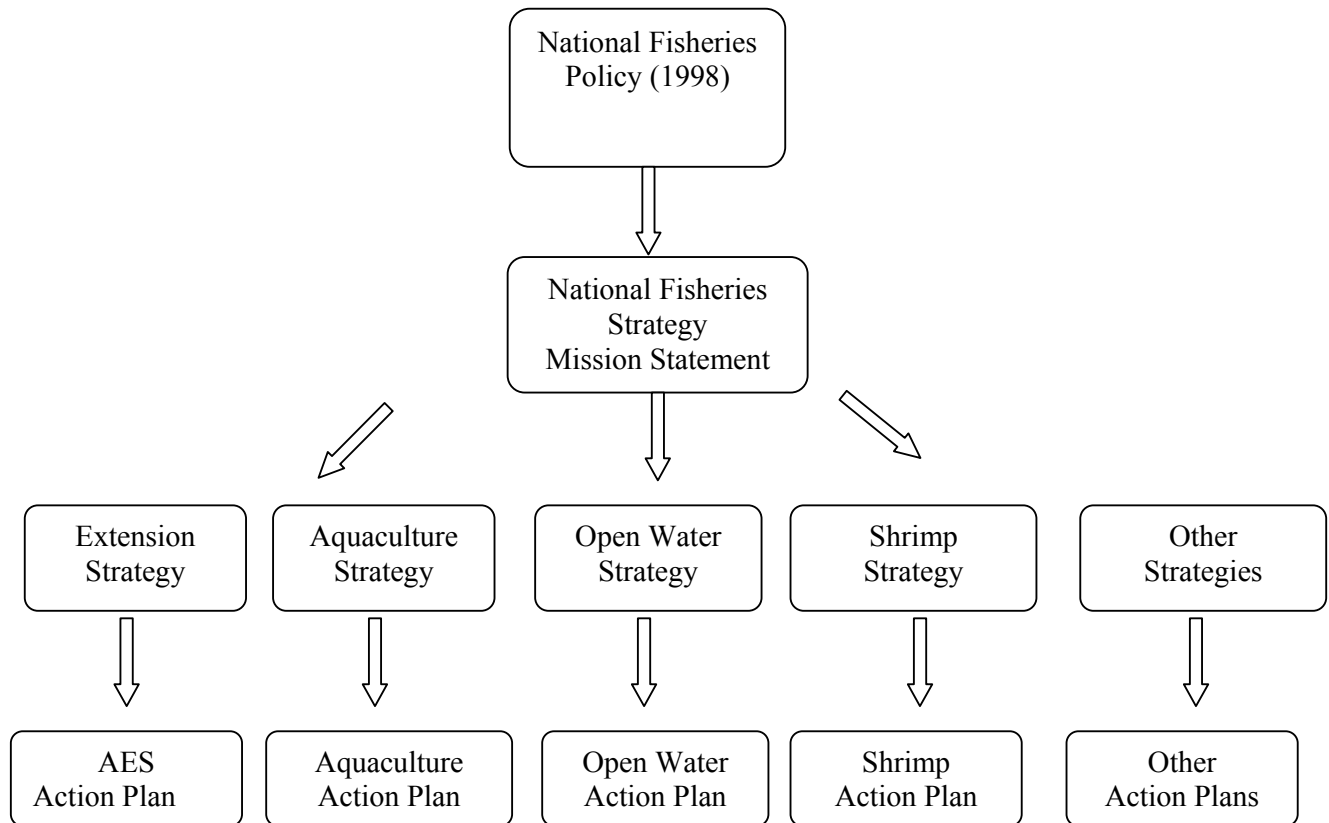
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## BACKGROUND

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### Policy Framework

This is part of a set of **Strategies and Action Plans** that will direct the management of the department. It is complementary to the Aquaculture Extension Sub-strategy which was prepared in 2003, and represents the support and regulatory side of aquaculture activities.



Other Strategies and Action Plans include Planning, Monitoring and Evaluation; Human Resource Development and Quality Control

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## APPROACH

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### **The approach to developing the Aquaculture Sub-strategy was three-fold:**

**1. A review of the key documents** that lay out the principles upon which the Government of Bangladesh and its cooperating partners are planning and implementing their development activities and the identification of those principles and objectives that relate to aquaculture extension.

**2. An extensive consultative process** involving different stakeholders in aquaculture to clarify the current problems and agree on means of overcoming these.

The stakeholders consulted, through workshops and discussions between October 2003 and May 2005, included:

|                                  |                                       |
|----------------------------------|---------------------------------------|
| Farmers                          | DoF staff at all levels               |
| GoB funded DoF Project Directors | Donor funded DoF aquaculture projects |
| GoB local government staff       | Private sector entrepreneurs          |
| NGO staff                        | Rural credit organisation staff       |
| DAE and project staff            | Research professionals                |
| University lecturers             | BRDB                                  |

**3. The summarising of the findings of 1 and 2 under eight agreed themes** to provide an agreed Aquaculture Sub-strategy and the basis for the subsequent development of an Action Plan upon which the Department of Fisheries can develop its aquaculture activities in a rational manner.

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## DOCUMENTS PROVIDING GUIDING PRINCIPLES

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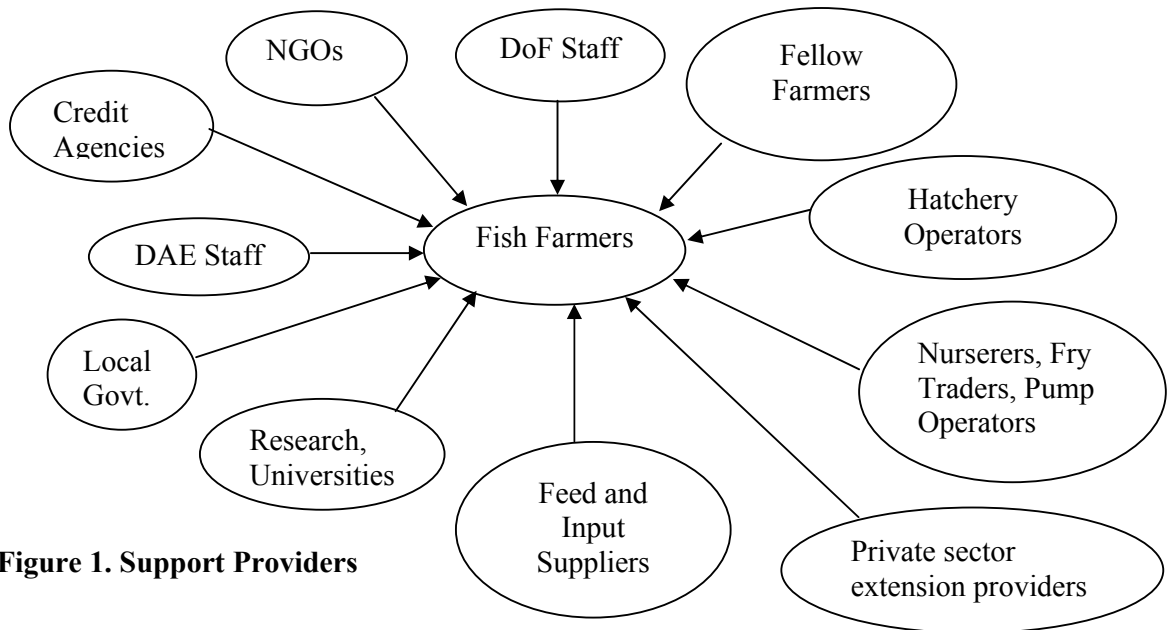
The Government of Bangladesh and its cooperating partners are planning and implementing their development activities according to the principles laid out in a number of key documents, these include:

|                             |  |
|-----------------------------|--|
| <b>International Level</b>  |  |
|                             | <b>Millennium Development Goals</b>  |
|                             | <b>FAO Code of Conduct for Responsible Fisheries (1995)</b>  |
|                             | <b>The Rio Declaration and Agenda 21 (1992)</b>  |
| <b>National Level</b>       |  |
|                             | <b>The Constitution of the Government of Bangladesh</b>  |
|                             | <b>The 6<sup>th</sup> 5-Year Plan (Draft)</b>  |
|                             | <b>The National Strategy for Economic Growth, Poverty Reduction and Social Development (Draft)</b> |
|                             | <b>Various Acts of Parliament defining pyramidal structure of local Govt.</b>                      |
| <b>Cross-Sectoral Level</b> |  |
|                             | <b>Comprehensive Food Security Policy (Draft 2000)</b>   |
|                             | <b>National Rural Development Policy (MoLGRD&amp;C 2001)</b>                                       |
|                             | <b>Environment Policy &amp; Implementation Plan (MoEF 1992)</b>                                    |
|                             | <b>The National Environmental Management Plan (1998)</b>   |
|                             | <b>National Water Policy (MoWR 1999a)</b>  |
|                             | <b>The Bangladesh Water and Flood Management Strategy (1995)</b>                                   |
|                             | <b>National Women Development Policy (1997)</b>  |
|                             | <b>National Land Use Policy (MoL 2001)</b>   |
|                             | <b>National Energy Policy (1996)</b>   |
|                             | <b>National Industry Policy (2005)</b>   |
| <b>Sectoral Level</b>       |  |
|                             | <b>National Fisheries Policy (MoFL 1998)</b>   |
|                             | <b>The Fisheries Sector and Future Developments Study (2003)</b>                                   |
|                             | <b>National Agricultural Policy (MoA 1999)</b>   |
|                             | <b>Livestock Development Policy (MoFL 1992)</b>  |
|                             | <b>National Forestry Policy (MoEF 1994)</b>  |
|                             | <b>Fisheries Sector Review and Ten Years Perspective Plan (2001 BARC)</b>                          |
| <b>Sub-Sectoral Level</b>   |  |
|                             | <b>Draft Aquaculture Extension Sub-strategy (2003)</b>   |
|                             | <b>Draft Shrimp Sub-strategy</b>   |
|                             | <b>Draft Inland Capture Fisheries Sub-strategy</b>   |
|                             | <b>Draft Marine Sub-strategy</b>   |
|                             | <b>Draft Monitoring and Evaluation Sub-strategy</b>  |
|                             | <b>Draft Human Resource Development Sub-strategy</b>   |
|                             | <b>Draft Quality Control Sub-strategy</b>  |
|                             | <b>The New Agricultural Extension Policy (1996)</b>  |
|                             | <b>Fish Inspection and Quality Control Rules/1997</b>  |

## Key Requirements for an Improved Service

### Coordination

There is a need in the aquaculture sector for better co-ordination and direction of support activities at all levels. This Sub-strategy for Aquaculture is therefore essentially about people and how all providers can work together in a coordinated way to ensure that aquaculture in Bangladesh develops as an effective, sustainable livelihood option, but with the framework and regulation to ensure that it develops in a structured and sustainable way.



**Figure 1. Support Providers**

### Regulatory Framework

The rapid growth in the aquaculture sector in the 80s and 90s has been a principal driving force in the rural economy. For the growth to continue then a development framework round a set of regulations is required. Unlike in the past when many regulations were adopted but not adhered to, it is imperative that any new or revised regulations have the full support of all stakeholders which help ensure that the regulations are put into force. This requires a consultative process and also requires that key stakeholders i.e. the private sector take on a major role in enforcing the regulations either through certification schemes or membership of associations.

### Self Certification and Quality Assurance

The role the private sector plays must expand to and cannot just be one of production. It has to take increasing responsibilities for its activities and ensure that these are in the best interests of the sector and not just on the profit levels of the individual. This will require the private sector organising itself into a number of associations that can exert influence on its members to comply with the standards that they impose themselves for the development of a quality industry.

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## AQUACULTURE SUB-STRATEGY OBJECTIVE STATEMENT

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### Objectives of the National Fisheries Policy (Development Goal)

- 1. To enhance fisheries production and development*
- 2. To alleviate poverty through creating self-employment and improvement of socio-economic conditions of fishers*
- 3. To meet the demand for animal protein*
- 4. To achieve economic growth and increased foreign currency earnings by exporting fish and fisheries products*
- 5. To maintain an ecological balance, conserve biodiversity and improve public health*

### Mandate of the Department of Fisheries

Under the National Fisheries Policy the following tasks are specific to this sub-strategy:

- 6.11 **The private sector shall be responsible for the commercial production of fish fry. The private sector will be encouraged to establish more hatcheries for fry production.**
- 6.12 **Arrangements will be made to transfer the improved technologies for aquaculture through regular training in the government fish farms and training centres. Brood banks shall be established in the government farms for distribution of quality brood to the private hatcheries. The government hatcheries/ farms will also be used as centres for training farmers and entrepreneurs in fish culture management, fish breeding and fry production technologies.**

### Objectives of the Aquaculture Sub-strategy (Purpose)

*The provision, by the Department of Fisheries and partners, of a support and regulatory framework that will enable the aquaculture sector to develop in its ability to generate a livelihood for the rural dwellers in so doing provide employment for the rural populace and by supplying quality fish at an affordable price to the consumer*

### Components of the Aquaculture Sub-strategy

- Ⓒ Aquaculture resources
- Ⓒ Regulatory Framework
- Ⓒ Certification and Quality Assurance
- Ⓒ Support Services
- Ⓒ Co-ordination, Collaboration and Linkages
- Ⓒ Environment
- Ⓒ Planning, Monitoring and Evaluation
- Ⓒ Human Resource Management

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## AQUACULTURE RESOURCES

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### Objective:

*Through an improved knowledge of the resource base, support the continued development of aquaculture in all areas of Bangladesh.*

The future development of aquaculture depends on the status of existing resources and the potential for bringing more resources under management using aquaculture principles. Surveys have been undertaken in the past, but the rapid growth of the aquaculture sector has meant that most statistics on current resources are no longer valid. This has been the result of rapid changes in existing resources through improved cultivation, but has also been as a result of bringing new resources under cultivation. Previous survey also neglected to include small ponds which surround most houses and form the main area of production for the poor. Growth has not been uniform through out the country, but has been focused on areas where government has concentrated resources such as projects or infrastructure i.e. Mymensingh (Danida Projects) and Jessore (through the initial development of hatcheries). Growth has also been faster in areas where the environment and climate is more suited to aquaculture i.e. is not constrained by sandy soils or cool winter temperatures.

The consequence of this rapid growth in different areas has meant that we are not sure of the levels of resource development and we cannot actively support development in new areas as we cannot determine the potential. For future development the following steps must be taken:

- Survey all Upazilas stating the existing resources and their current production levels.
- Through the preparation of an agro-ecological map and based on existing resources develop a zonal sub-strategy for future aquaculture development support in the diverse areas of Bangladesh.
- Develop specific approaches for different areas depending on comparative advantages
- Detail short falls in resources needed to support the area development and identify measures to remedy the shortfalls i.e. distribution of hatcheries, access to feed, access to markets
- Determine any potential detrimental impacts of expansion of aquaculture, for example loss of flood plains or destruction of other resources such as agricultural and forestry land.
- Determine any potential environmental impact or pollution from adjacent industries that might reduce productivity i.e. insecticides on high value horticultural cash crops or pollution from garment factories.
- Develop monitoring systems to determine the impact of the continued aqua-cultural expansion.

A key resource for the continued growth of the sector is the availability of genetically pure brood to supply to the commercial hatcheries. At present steps are being initiated for this, but this must be fully established as a priority in the next five years.

- Support the protection of areas declared as national sanctuaries to protect brood and spawn of nominated species.
- Establish the genetic purity of all sources of indigenous and exotic brood.
- Develop a national brood plan for the conservation and production of indigenous and exotic brood.

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## REGULATORY FRAMEWORK

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### Objective:

*To provide a framework of controls that will direct growth and ensure that the sector is able to expand through access to quality inputs.*

The expansion of aquaculture has been dramatic, but it has largely been unregulated. This has now started to act as a constraint on the long term development. Poor (genetic) quality of fingerlings due to poor brood selection, in breeding and hybridisation has reduced the growth potential of many the species and has serious environmental consequences for any fingerling that might find their way into the wild either through stocking or unintentionally during floods. The continued expansion in some areas will require increasing quantities of feed to be made available which must be formulated to according to the species and availability of local feeds. The preparation and the enforcement of regulations has now become a priority.

### Registration of Hatcheries

In order to regulate the activities of the hatcheries, all must be registered and should comply with a basic set of criteria.

- Prepare a basic set of requirements to be complied with for all registered hatcheries,
- Draft legislation requiring all hatcheries to be registered and ensure they comply with the requirements as laid down,
- Provide training and support (both technical and financial) to enable hatcheries to comply with the regulations.

### Registration of Feed Preparation Plants.

- Ensure all feed plants currently or wishing to supply feed to the fisheries sector are registered and entered into a data base,
- With support of research prepare guidelines on feed formulation for different species,
- Develop the testing capacity (infrastructural and technical) to ensure feeds are compliant with requirements and also match specifications stated by feed producers

### Marketing of Fish

The National Fisheries Policy places emphasis on improving both the quality of domestically consumed and exported fish and on improving the marketing so fish farmers are benefited by improved returns. This is an area that requires close collaboration both within DoF (Quality Control Wing) and with other agencies such as local Health Dept. and local government.

- In collaboration with key partners establish a set of rules detailing regulations for all aspects of the marketing of fish and fish products i.e. provision of ice, transportation, local markets and central markets.
- Develop an enforcement procedure to ensure that the rules are complied with and the quality of marketed fish complies with established market standards.

### Chemical Availability and Use

- Establish rules and a list of chemicals that can be used within aquaculture and list prohibited substances.
- Establish testing facilities to test for contamination by banned chemicals.



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## CERTIFICATION & QUALITY ASSURANCE

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**Objective:**

*Through private sector initiatives for self-certification establish a sector where the stakeholders producers have confidence in the quality of their inputs and the consumers are given a product that met their requirements.*

In conjunction with the development and enforcement of regulations, which is seen as largely government driven, there is need for the development of standards within the industry. These can be seen as self certification or quality assurance standards that members of an association impose on its members and are determined either by the industry itself or a nominated organisation or group of stakeholders.

**Hatcheries:**

- Promote the development of a certification and quality assurance scheme for hatcheries based on genetic quality of fingerlings and their health and potential to grow as per expectations.
- Form hatcheries into an association with the objectives to promote the improvement of standards within the sector to ensure brood stock and that of fish seeds.
- Support the development of certification scheme through access to loans and training,
- Develop awareness amongst farmers on the merits of fingerlings from certified hatcheries and endorse a premium pricing structure,
- Develop support to monitor and support the certification of hatcheries through monitoring of genetic quality of produce

**Feed Industry**

- Support the feed industry to develop the capacity to supply quality feeds to the fishery industry through the provision of training and technical support
- Link in with research organisations to improve feed formulation and identify cheap local sources of the ingredients,
- Develop industry led standards for quality assurance of fish feeds.

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## SUPPORT SERVICES

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### **Objective:**

*Develop key institutions both public and private to provide the support required to enable the continued growth of the aquaculture sector.*

To ensure rapid and sustainable development of the fisheries sector, the service delivery systems of extension providers should be efficient and improved. Gradually as the capability of the private sector develops, support services provided by the government will reduce. This must be seen as a long-term objective for both the government and the private sector however in the interim support is still required to ensure that the rapid growth seen over the last twenty years can continue.

In its previous support to the sector the Department of Fisheries built up a substantial infrastructure to support the provision of fingerling to the private sector. This role has largely been transferred to the private sector, but the infrastructure still remains. New roles for these facilities must be developed to ensure that they are useful or if no new role can be found they should be leased to the private sector. This transfer has however faced complication as fingerlings produced at the government farms tend to be of a higher quality than those in the private sector and farmers are increasingly seeking these, knowing their value. Also other attempts to hand on the resources for NGOs to use have largely been unsuccessful. The principal argument against keeping the facilities is that the government should not be seen to be in competition with the private sector and that the retention of the facilities ties up a large number of staff in a section that is already under staffed.

Roles identified for these support the following key support services:

### Brood Banks

The need to secure quality brood and rear these for supply to the private sector hatcheries has already been identified. To ensure this:

- Identify sources of pure brood and develop the infrastructure (government and private sector) to supply the industries needs
- Develop a brood action plan to ensure that the private sector and introduce controlled breeding programme for the maintenance of genetically pure brood,
- Identify the best genetic stock of introduced species i.e. Silver Carp and develop breeding programmes to develop parent lines for future brood production.
- Through the identification of key private sector hatcheries privatise the production and distribution of brood for commercial hatchery use.

### Research

The continued development of aquaculture requires the constant flow of information from research. How much of the information required currently is on how the existing knowledge can best be applied

- Develop adaptive research programme between all stakeholders including farmers, researchers and DoF,
- Monitor international research for information relevant to Bangladesh and test its application.

### Field Research Stations

The relevance of research and the access to research findings could be improved by undertaking research in conditions found at the farmer's level.

- Develop linkages with research institutes to undertake relevant adaptive research under field condition,
- Establish MoU between DoF and research institutes for the use of DoF's Fish Seed Multiplication Farms for farmer oriented research

#### Demonstrations:

In conjunction with the Aquaculture Extension Sub-strategy there is still the need for demonstrating the best practices and new ideas to farmers.

- Fully utilise the Fisheries Extension Training Centres as part of a holistic extension approach to demonstrate key aspect of aquaculture and new innovations.
- Demonstrations on the propagation of a wider range of indigenous fish species (shing, deshi magur, koi, pabda etc

#### Credit

The provision of credit for the development of aquaculture by the poor is still cited as the major limiting factor. This is despite the plethora of credit institutions found in the rural areas.

- Identify the chief constraint to fish farmers attaining credit.
- Develop link with financial institutions to furnish credit to the target group.
- Identify sufficient capital to ensure that credit is no longer a limitation.

#### Rural Input Distribution System

Growth in aquaculture away from the urban centres will be constrained by the lack of inputs required for cultivation of the ponds. To overcome this various measures need to be undertaken:

- Form local farmers into associations that can be seen as an attractive marketing target for retailers
- Development of a network of resources centres which can also act as outlets for supplies and advice on their use

#### Marketing

The current marketing infrastructure enables middlemen to gain control of the markets and take an excessive percentage of the returns. This need -

- Support the improved marketing of fish by developing improved municipal infrastructure
- Promote the formation of Farmers Cooperatives to organise the direct marketing of fish to consumers in metropolitan areas to improve the returns to producers.
- Introduce growers' / producers' market and, or morning market of fish to facilitate the producer in getting better sale value of their produce and ensure quality fish supply to the consumer at an affordable and competitive price.

#### Education

The management of the aquatic resources will require staff with more detailed technical ability. This will require the education establishments to provide a range of skilled graduates to take on this role.

- Undertake a needs assessment for future skills

- Develop a range of modules to support the training of staff at all levels from undergraduate to post graduate and for career development.

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## COORDINATION, COLLABORATION AND LINKAGES

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### Objective:

*Improve coordination through improved collaboration of all stakeholders involved in the management and production of fish from aquaculture.*

The changing role of the government from being the main support service provider to the role of regulator must mean that a new set of linkages and collaboration are required. New linkages are also required to enable the demands from other water and land users are also considered during the planning process.

There is also need for closer collaboration at the field level to help facilitate planning of the local resource and ensuring that the inputs are available for both supplies and knowledge. This diverse set of collaborative needs have been articulated in the other strategies, but the nature of aquaculture which predominantly using resources owned by the fish farmer means that the strong needs for community cooperation found in the management of common property resources are not so dominant in the linkages.

### National Planning linkages

The co-ordination between Ministries such as Agriculture, Land, Water, Local Government and Fisheries to ensure harmony amongst the different policies is essential.

- Formation of a Natural Resources Management Committee at Ministerial level, and
- Formation of a Fisheries Management Executive Committee at secretarial level

### Field level linkages:

The development of aquaculture in the village for small enterprise does not at present require much control, however if larger enterprises are developed that could have an impact on the environment either through pollution or disruption of water flows then local level regulations are required.

- Formation of a local Upazila Fisheries Committee to monitor and regulate all large fishery developments.

### Inter – industry linkages

The different sectors of the aquaculture industry need to be coordinated and grouped to enable them to have effective dialogue with policy makers and during the preparation of regulations. The bodies or association will also play a key role in certifying the activities of their members. For this to be effective a range associations need to be established including, but not limited to:

- Hatchery operators,
- Fish producers
- Traders and merchants

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## ENVIRONMENT

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### Objective:

*Increased awareness amongst all stakeholders of both the impact that aquaculture can have on biodiversity/the environment and the impact the environment can have on aquaculture so that they can participate in the identification and mitigation of adverse effects.*

The development of recent policy documents such as the Biodiversity Conservation Strategy and the increased acceptance of the FAO Code of Conduct for Responsible Fishers place an increased onus on fisheries to be done in a conscientious way to ensure that the environment is not adversely affected by its activities. This requires a good understanding of the potential impacts.

### Impact of aquaculture on the environment

- Loss of biodiversity through careless brood fish collection, breeding and escape into the wider aquatic environment and through less emphasis on the culture of indigenous species including small indigenous species (SIS).
- Introduction of exotics and genetically modified species which may escape during floods, damage to ponds or through other means.
- Destruction of the environment during the construction of aquaculture facilities.
- Spread of disease from intensively farmed fish or shrimp.
- Eutrophication of water.

### Impact of the environment on aquaculture

- Loss of habitat through siltation.
- Loss of production through pollution from industry or agricultural chemicals.
- Shortage of clean water (or brackish water for *bagda*) due to drought or water management practices.
- Excess rainfall leading to flooding or dilution of brackish water for *bagda*.

### Major factors affecting environmental impact of aquaculture

- The type of aquaculture system.
- The degree of intensification.
- Species and strains/varieties characteristics.
- Location and site factors.
- Operational and farm management practices.

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## PLANNING, MONITORING AND EVALUATION

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**Objective:**

*Through the development of effective monitoring and evaluation system support the development of aquaculture through a planned approach based upon a reliable understanding of the resource and the impact activities on its development.*

Under the Planning, Monitoring and Evaluation Sub-strategy a detailed approach has been advocated to improve the monitoring and evaluation of the whole sector. Emphasis is placed on the aquaculture sector as this offers the best options for growth and must be supported by reliable data to help the planning process. The key to determine how well development is proceeding depends on having a clear understanding of the baseline and what targets are being sought. These should include setting targets for:

- Production levels for different systems, species and management levels
- Impact on supporting the objectives of the PRSP in poverty alleviation,
- Impact of regulations on achieving improvements in quality and availability of improved fingerlings and feed, and
- National distribution of aquaculture development and its role in regional development.

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## HUMAN RESOURCE DEVELOPMENT

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**Objective:**

*A systematic Human Resource Development Sub-strategy developed and implemented so that the staff of the Department of Fisheries and its partners are able to meet the challenges of implementing the Aquaculture Sub-strategy.*

Over the last twenty years a substantial number of the DoF staff have had the opportunity to go for further study and so there is large pool of well-trained staff. However the strategy advocates a number of new roles for the sector. These require increasing expertise and so a training programme is required to build up these skills. It is however imperative that this skill base is not diluted by key personnel being transferred away from their area of expertise so key core competencies must be retained i.e. fish breeding/genetic integrity specialist, economists.

- Undertake a training needs assessment for new skills advocated under the HRD Sub-strategy.
- Establish core postings requiring specialised skills and ensure an HRM system that staffs these positions with trained staff,
- Improve the capacity of DoF to develop and enforce the regulatory framework advocated, and
- Improve the capacity of other stakeholders to support the implementation of the regulatory framework of the Aquaculture Sub-strategy.