
INLAND CAPTURE FISHERIES SUB-STRATEGY

Department of Fisheries

Matshya Bhaban

Ramna, Dhaka



January 2006

BACKGROUND

Introduction.

The management of the inland capture fisheries must balance a diverse set of demands on the resource. These demands come from various different policies that are conflicting in their objectives:

- maximising short term production or managing the resource, ensuring its ability to naturally recruit and to conserve its biodiversity
- managing access for the wider community reliant on fisheries, or to generate maximum revenue for the government through the lease of water bodies.

There is also a balance to be made with other parts of the fisheries sector i.e. aquaculture and marine capture fisheries (both artisanal and commercial). These may be better able to supply the demands for fish for the urban populace and meet the demands for economic growth and export earnings. This strategy is aimed at producing a guideline for the implementation of the inland capture fishery components of the National Fisheries Policy (1998) as applicable.

If the principle of managing the resource in a sustainable way for the benefit of genuine fishers and ensuring a livelihood for those that have traditionally relied on the resource can be accepted, then aspects of the strategy can be defined. These should promote access for the wider community reliant of fisheries, conservation of the resource to protect the biodiversity and nature of the resource and management for ecological sustainability.

The sub-strategy at field level is based on establishing a national framework which supports local (Upazila level) decentralised implementation. It aims to enable user communities to make and implement resource management plans that achieve productive sustainable fisheries where poorer fishers derive the majority of benefits. In order to support this, local government must be strengthened with the establishment of a fisheries management committee to compliment the main development committee of the Upazila.

The strategy aims to ensure that a national plan is in place to establish sustainable management for all types of inland water bodies. A priority would be the establishment of a network of sanctuaries that will provide dry season refuges for broodstock that will naturally restock the flood plains and rivers. It also requires other technical management options such as habitat restoration, controls to the fishing effort and stocking. This requires strong central advocacy and lobbying to ensure that these measures are declared and enforced. Similarly the importance of dry season flows should be maintained through inter-governmental dialogue supported by advocacy from all stakeholders. It also requires that issues affecting fisheries are understood by policy makers and that these concerns are taken on board.

Government agencies must cooperate with other organisations, as appropriate, to encourage this and to monitor and assess achievements. Community organisations that have appropriate plans and demonstrate improved utilisation in terms of sustainable and equitable management would then be granted long term use rights to jalmohals. Similar plans for non-jalmohal floodplains that form significant local fisheries will also be encouraged and supported through the same mechanisms, where this shows improvements. Land use changes that would adversely affect the rights of poor fishers should be vigorously opposed.

The timeframe for implementing the issues raised, by their nature, needs to be over a long period as community mobilisation cannot be hurried and the constraints to service resources,

both funding and manpower, will also further extend the period required. In support of this an action plan detailing priority actions will be prepared.

During the preparation of the sub-strategy extensive consultations have taken place. This has been headed by a core team comprising senior Department of Fisheries' staff, field staff, NGOs, research bodies, universities and technical assistants who have been supporting various projects in this field.

Lessons Leant from Previous Interventions

Over the last twenty years there have been several interventions aimed at developing management systems for the inland capture fishery. These have included management policies, government edicts and numerous donor projects.

In view of the physical, biological, social and economic complexities of inland capture fishery resources, it is extremely difficult for any one management system to be conclusive and so a flexible approach is required based on local circumstances. From the various projects so far it can be concluded that:

- The current system of leasing is a disincentive to sustainable management and benefits the wealthier who can raise the capital for the lease fee,
- Open access for rivers and other flowing waters does not benefit the poor and through lack of management controls allows over fishing and capture of the fishery by strong non-fishermen groups,
- There is insufficient coordination among sectors that manage the water resource,
- The management of the resources by Community and Co-management Based Organisations has been shown to be effective, however greater attention needs to be given to institutional and community organisation issues rather than just the technical fisheries management options,
- Stocking in smaller closed baors and beels has been successful in raising production and benefiting poor fishers when the fisher communities are organised, are given long term access rights and receive suitable support including credit from NGOs,
- Stocking in large floodplains could increase production but was not sustained. Technical and environmental constraints were encountered, but the main problem was that communities did not have local user organisations that could manage the resource and finances in a sustainable way.
- In beels and rivers habitat restoration, sanctuaries and local fishing restrictions have shown some success and brought general benefits to the communities, but the costs relative to benefits need to be assessed – low cost activities that are within the means of the fishers to continue, seem preferable.
- Unless strong links between fisher/user organisations and local government, as well as DoF are established, local community based organisations do not have the strength to maintain management initiatives and resist pressures from outside elites.
- Where major fishing restrictions were imposed alternative livelihoods are required to compensate for loss of income,
- Current methods of managing inland capture fisheries has lead to a loss in biodiversity,
- The quality of data on the resource generated from FRSS statistics is misleading and a new more robust catch assessment and resource monitoring system is needed.
- If long term use rights for the fisher communities are not established, sustainable management cannot be adopted or continued.
- The time frames for most interventions were too short to establish sustainable management systems.

THE STRATEGY

Objectives of the National Fisheries Policy (Development Goal) are:

- 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 and improve public health**
- 4. To achieve economic growth and increased foreign currency earnings by exporting fish and fisheries products**
- 5. To maintain an ecological balance and conserve biodiversity.**

Objective for the Strategy

To attain sustainable management of the Inland Capture Fisheries for the local fishing and user communities through collaboration of all concerned partners.

Key Components of the Strategy for Conservation, Management and Exploitation of Fish from Inland Capture Fisheries

Here are summarised some of the general aims and provisions of the strategy. In addition the provisions of the separate Hilsha management strategy form an integral part of this strategy.

1. Sustainable fisheries management in the interest of genuine fishers shall be promoted instead of the existing revenue based management system, with the aim of promoting the conservation of inland capture fisheries resources. Harvesting of fish should be kept within the maximum sustainable level.
2. People who depend on catching fish themselves will be given priority in gaining the lease of jalmohals. According to the local situation, users may be organised into fisher based organisations or broader community organisations where the role of fishers is emphasised. For this they may be organised as cooperatives, under social service department, or as other community based organisations.
3. Fisheries management and access to waterbodies will be coordinated mainly at the Upazila level, through formation of Upazila Fisheries Committees, and this will include training and advice on fisheries management.
4. Upazila level achievements of fishers in implementing their fishery management plans for ecological sustainability and equitable distribution of benefits will be assessed, and long-term use rights reserved for community based organisations according to performance.
5. Leasing will primarily be a means of controlling access to water bodies and not as a government system to raise revenue. This has the potential to generate more income than a revenue based system.
6. All water bodies of the country will be identified in an inventory along with their current status, area, etc. These areas will be reserved as inland fisheries and changes in their use and loss of wetland area prevented.
7. Local fishery management plans that specify conservation measures and ensure sustainability will be established for all waterbodies through fisher based organisations with support of local government.

8. Year-round and seasonal fish sanctuaries will be established to increase production and to conserve biodiversity focussed on dry season fish refuges and on key breeding grounds, within this:
 - a. In general sanctuaries in part of a waterbody will be established by the concerned user communities as part of their fishery management plan and endorsed by local government and Department of Fisheries.
 - b. For some critically important fisheries a whole jalmohal may for national interests be designated as a fish sanctuary for a token lease payment and will be transferred to the Department of Fisheries and managed at the upazila level, provision for any mitigation needed for fishers from that area will be made.
9. Closed seasons in local fishery management plans will be encouraged to control the harvesting of gravid fish in order to enhance their breeding and propagation and of fry and fingerlings to give them the opportunity to grow and improve returns on investment. For widespread fisheries such as hilsha this will require coordination among districts.
10. Local user communities would be encouraged to undertake measures to reduce fishing pressure and implement bans on destructive fishing gears /methods e.g. dewatering.
11. All dry season waterbodies (lakes, beels, ditches, canals and other open water bodies) should not be completely de-watered.
12. Restoration of silted up water bodies such as haor, baor and beel through excavation of sanctuary areas and links to rivers will be promoted to restore capture fisheries.
13. Conservation and propagation of the threatened and endangered fish species in their native habitat will be encouraged.
14. Damage done to fish and fish habitats during the implementation of all development activities such as flood control, irrigation and drainage projects, agriculture, industries, road and urban projects, shall be minimised and mitigation measures undertaken.
15. Cooperation among relevant government agencies to enforce existing water quality standards will be a priority to ensure that discharge of harmful municipal and industrial wastes directly into the water bodies is controlled and those who abuse by failing to treat waste face legal proceedings;
16. Integrated pest management will be promoted to minimise use of agro-chemicals in agricultural fields.
17. Import, manufacture, sale, storage and use of current net (mono-filament net) and other such nets harmful for the fisheries resources will be banned.
18. Fish stocking (enhancement) by fisher communities will be promoted in smaller waterbodies that have become closed as a result of flood control, and irrigation projects or natural causes and where links to wider systems cannot be restored.
19. Private aquaculture in floodplains will only be encouraged where these are smaller areas and do not have significant natural fisheries. Larger floodplain systems should be brought under local fishery management plans to sustain the capture fisheries and biodiversity and protect fishers' access.
20. Cage and pen culture designed to be accessible for poor people will be encouraged through successful demonstrations in areas where this would not adversely affect capture fisheries.
21. Establish strong and effective co-ordination at national and field level between all major stakeholders involved in the management of the water resource. DoF would be the lead agency responsible for the provision of technical fisheries advice.

Time Frame

The time frame for the strategy necessitates being over at least 20 years. Experience has shown that the development of local management by genuine fishers takes longer than many envisage. This together with the changes to existing leases and the resources needed to provide the support to communities means that the commencement of activities would have to be staggered over the initial stages of the strategy.

Targeting

The strategy is targeted at the genuine fishers and users of the resource associated with the inland capture fishery. These tend to be the poor who have relied on the sector to support their livelihood.

- Genuine fishers –people who catch fish by their own hands for income
- Other resource users –poor who rely on the sector to support their livelihood

Although many rich and elite members of the community have traditionally benefited from the resource, this has largely been as controllers of access rather than a member of the community who has partaken in the capture of the fishery resource. It is therefore felt that the access and management of the resource should be entrusted to those who rely on it for their basic livelihood.

This is in compliance with the National Fisheries Policy and the interim Poverty Reduction Strategy Paper.

Variances with the National Fisheries Policy

Since the National Fisheries Policy was developed greater experience had been gained in community based management and the plight of inland capture fisheries has become clearer. The strategy is consistent with the policy, but differs in that a range of fisher community based organisations would be recognised, not just cooperatives. Also fishery management plans will be encouraged to ensure restoration of sustainable productive fisheries. For this, sanctuaries, conservation and habitat restoration will be key methods that communities can adopt and can be extended. Conversion of locally significant capture fisheries to aquaculture would not be promoted as advocated under 5.4 and 11.1 of the National Fisheries Policy

Planning and Administrative Support:

To ensure that the management of the inland capture fisheries is for the benefit of local communities and is planned and administered with the objectives of the inland capture fisheries strategy as the goal and is supported by the collaboration of all concerned partners.

- Resource utilisation planning: *Ensure that the resource is utilised in a planned way and managed for its long term viability, focusing on the key objective of the inland capture fishery strategy.*
- Local planning and decentralisation: *Organisational change within the Department of Fisheries and local administration of jalmohals and wetlands allowing decentralisation of planning, implementation and monitoring of support activities to ensure that fisheries are sustainably managed by user communities particularly fishers.*
 - Establish local administration and management of inland capture fisheries and related aquatic resources under the supervision of Upazila administration (Upazila Fisheries Committee).

- Water bodies which cover parts of more than one Upazila would be administered from the Upazila where the largest of the waterbodies is located.
- Management would, as far as is possible, be by local communities, especially the primary resource users who live around the water body and are directly or indirectly dependant on it.
- Transfer overall responsibility for planning, monitoring and evaluation, and decisions on tenure/lease issues, to Upazila administration
- Administration would remain with the local representatives of the Ministry of Land, but would be supported by an Upazila Fisheries Committee (UFC) to oversee and assess the adoption of improved fisheries management
- The Upazila Fisheries Officer, together with support from other DoF officers, would be the key technical advisor to ensure that the fisheries are managed on a sustainable ecological basis.
- Granting of leases would be dependent on the submission and subsequent implementation of fisheries management plans.
- Constraints in staff resources would necessitate the development of a priority list of upazilas and sites where the implementation of the strategy would be first implemented, this should include locations where improved management by communities has already been achieved.
- National planning: *Through the collaboration of policy makers and key national implementation agencies ensure that utilisation and management of water bodies supports the key objective of the open water strategy*
 - Coordinate designation of a national network of sanctuaries that can protect key “mother fisheries”.
 - Inventory and categorize all inland fisheries and jalmohals combining legal definitions, access rights, type of habitats, social factors like dependency of user groups, local conflicts/ cohesiveness, potential pollution, etc.
 - Distinguish the following types: (i) flowing rivers and/or river sections, (ii) open beels merged with floodplains (iii) open beels (iv) open floodplains without permanent publicly owned beel, and (v) closed or embanked water/beel/ dead rivers.
 - Group into potential management units based on biophysical factors and socio-economic characteristics.
 - Ensure that all national policies affecting the fisheries sector are implemented in support of the ICFS including the national biodiversity strategy, national water policy etc.
- International concerns and planning: *Ensure that the interests of Bangladesh’s inland capture fisheries are considered in all international treaties that affect the fisheries and water resources of the country*
 - Cross-border river flows, particularly in the dry season and at times of fish migration, are of sufficient quantity and quality so that fisheries are maintained.
 - That international treaties and obligations on biodiversity and wetland conservation are adhered to, e.g. the formal recognition of Ramsar sites and the FAO Code of Conduct for Responsible Fisheries.
- Collaboration and Partnership: *Through the collaboration and partnerships of all concerned agencies and support services ensure that the use of the inland capture resource is managed in the best interest of the genuine fishers and user communities.*
 - Establish a National Natural Resources Coordination Committee to harmonise policy and a Fisheries Management Coordination Committee to ensure inter-ministerial cooperation on issues affecting the ICFS.

Access

The main objectives are to:

- a. *set access and conservation conditions to ensure sustainable fisheries that benefit those who fish for an income and recognise subsistence fishing rights for the poor,*
 - b. *encourage and enable long term use of jalmohals by local fishing communities at fair levels of revenue (lease) payment set nationally, provided they have equitable well managed community based organisations and have management plans to sustain the fishery,*
 - c. *support recognition of the fishing rights of local customary users (fishers) in seasonal floodplains and help them to develop appropriate management plans to maintain the biological productivity and ecological integrity of these floodplains.*
- **Beels and similar waterbodies:** *Through a leasing system based on the needs of sustainable management and not maximum revenue generation, provide access to government water bodies to genuine fishers and user communities.*
 - Leasing will primarily be a means of controlling access to water bodies and not a system to raise government revenue.
 - All leasing must be subject to the preparation and implementation of a management plan for the resource indicating approaches to sustainable management and identifying the participating fisher and user communities and should include, where feasible, a sanctuary as an integral part of the fisheries management plan.
 - For waterbodies that have an acceptable community organisation and are reserved for management by community organisations:
 - lease fees will be determined nationally as a set nominal rate per hectare that permits the involvement of the poor fishers.
 - VAT and income tax will be waived for jalmohal leases.
 - The same system will be adopted for fisheries above and below 20 acres in area, except that jalmohals below 20 acres that are tanks or other embanked waterbodies that are not part of a capture fishery would be retained for management by groups of poor young people, preferably from fishing communities.
 - For water bodies that do not have an acceptable community organisation and management plan, the normal leasing system will continue.
 - **Rivers:** *To re-establish management control over rivers by restricting access through leasing as jalmohals or by introducing a licensed based control system for large rivers.*
 - User communities should have a key role in managing and have assured access in their adjacent rivers.
 - In small-medium sized rivers (with a dry season width of up to 100 m) lease payments will be reintroduced so that fishers can establish use rights,
 - Payments will be set at a low nominal level to enable poor fishers to participate in the management of the fisheries resource.
 - The same administration and management principles as for other jalmohals will then be adopted through the upazilas as outlined above.
 - Development of co-management between fishing communities and local government is an urgent need in these waterbodies.
 - For rivers that do not have an acceptable community organisation and management plan open access will continue.
 - Existing licensing of mechanised fishing boats will continue for those operating in selected areas of large rivers

- DoF with the concerned local and district administrations will, on an urgent basis, pilot community based co-management in representative sites in large rivers.
- Privately owned flood plains: *Ensure that use of seasonal fisheries on private flood plain resources is planned and managed in line with the objectives of the Inland Capture Fisheries Strategy*
 - The Upazila Fisheries Committees will take a lead in coordinating development planning,
 - Large scale enclosures that would lead to degradation of these seasonal wetland ecosystems and loss of natural fish diversity would be subject to planning permission from the UFC,
 - Enclosures that would result in loss of access for traditional poor aquatic resource users of these floodplains would not be permitted,
 - Any structure or barrier that blocks the natural flow of water and movement of fish between critical habitats would be prohibited (as per Fish Act) and overseen by the UFC,
 - Local communities will be encouraged to develop management plans, and helped to link with appropriate government and non-government agencies and organisations for advice and support.

Environmental Management

To ensure that the environment and the biodiversity of the inland capture fisheries is conserved through adopting appropriate ecosystem management regimes

- Identify the impact that Inland Capture Fisheries has on the environment and the environment has on it and develop plans to mitigate against negative aspects of these.
- Through improved monitoring of water quality and pollution ensure that the causes of pollution within the vicinity of fisheries are identified and actions are taken to redress these and identify other industries that have enhanced pollution threats during the dry season which may also impact of the water quality of fisheries.
- Support the Department of the Environment to ensure that national water standards are met in all water bodies and that the terms of industries Environmental Clearance Certificates are fully complied with through field based technical support. Work with lobbying agents and international buyers to ensure compliance with international codes of conduct.
- Monitor the loss of water bodies through siltation and with the support of other water management agencies develop plans to reduce impact of siltation or through remedial measures such as habitat restoration mitigate against losses in connectivity and dry season refuges.
- Develop ecosystem approaches to conserve the integrity of wetlands and prevent loss of habitat through agricultural and land use practices that minimise soil erosion and siltation.
- Wherever possible public (*khas*) water bodies that have been encroached for other uses should be restored to capture fisheries.
- Encourage adoption of crops that have reduced dry season irrigation demands to reduce the loss of dry season surface water and adoption of cropping patterns that would not be affected by early monsoon water flows

- Develop systems to improve the quality and quantity of information on national wetland ecosystems which will enable the improved planning and management of wetlands.
- Develop an inventory of key fisheries and conservation areas detailing their extent and quality and support the conservation of these critical habitats, especially dry season wetlands, through the declaration of national sanctuaries or areas of critical ecological importance.
- Encourage advocacy and lobbying by influential institutions and NGOs for the conservation and protection of the resource to ensure awareness and compliance with policies.
- Enhance collaboration between national and international institutions for the implementation of relevant treaties and conventions.
- Improve local institutional capacity in wetland and ecosystem management.
- Ensure local regulations support the conservation of wetlands.

Technical Management

Establish sustainable management of water bodies and their ecosystems through improved community planning and appropriate management interventions including the establishment of sanctuaries, control of fishing effort, habitat restoration, stocking and other measures.

- Fish sanctuaries: *To ensure the establishment of protected areas that will enhance natural recruitment for fisheries and help conserve endangered fish species*
 - Critical areas for fish in major rivers (e.g. pockets where there is relatively low sedimentation and deep scour holes), in big floodplain-beel systems and in major canals of smaller systems will be identified through planning with local communities.
 - The establishment of an aquatic sanctuary in each capture fishery water body as an integral part of local fishery management plans for biologically sustainable fisheries through natural recruitment and conservation of biodiversity will be encouraged. This would apply to jalmohals under community based co-management, jalmohals leased through tendering, and significant flood plain areas.
 - To support the recognition of fish sanctuaries legislative changes will be promoted that will enable sanctuaries to be established either by the government in the case of a complete jalmohal (with an appropriate mitigation plan), or by leaseholders and/or local communities in part of jalmohals, other khas water bodies or private flood plains as part of fishery management plans accepted by the relevant Upazila Fisheries Committee and that have been assessed by it as being effective.
- Habitat Restoration: *To enhance the fishery by restoring and improving the environment or the connectivity to promote natural recruitment and dry season survival.*
 - Where interested community based co-management organisations exist and want habitat restoration for fish conservation, the Upazila Fishery Committees will help to mobilise government resources for excavating the silted up locations so that they hold sufficient water to form aquatic habitats
 - All embanked or open or semi-open flood plains owned/ managed by the Government or private sector, must keep and maintain internal canals and keep connectivity with neighbouring rivers or beels for easy movement of water and fishes. This will be facilitated by the government agencies or private sector

- responsible (as appropriate) excavating/ re-excavating silted up canals, where necessary. These canals should not be used for premature drainage of land for the cultivation of crops.
- Options for habitat restoration should include planting water tolerant tree species and restoring swamp forest which provides refuge for fish fry and fingerlings.
 - For fisheries and wetlands of national significance, Government will implement habitat restoration as a priority
- Fishing Effort Control: *To control fishing effort so that a sustainable yield is established and adhered to.*
 - Ban on complete dewatering: *To create awareness amongst all stakeholders of the detrimental impact of dewatering that will lead to an understanding of the issue and the compliance by the public in stopping dewatering.*
 - Seasonal closure: *To restrict fishing during periods when fishing efforts need to be limited e.g. the breeding and migration of brood fish, for the growth of fingerlings, or the conservation of brood stock.*
 - Gear Restrictions: *To control the use of destructive gear and limit the impact of destructive fishing practices (e.g. kathas, current nets, and estuarine set bag nets).*
 - Limiting Fishing Effort: *To restrict the numbers of gears used and the numbers of days they are utilised through local rules and limits on access, to be set and enforced by user communities through locally enforced gear fee/licensing system.*
 - Licensing of mechanised boats in inland and coastal waters should be harmonised and the number of boats limited to allow sustainable use of the resource and adequate access for non-mechanised fishers.
 - Stocking of fingerlings: *Enhance production through stocking of fingerlings in areas where natural recruitment is unable to support the productive potential of a water body.*
 - In general, small and well-defined beels, dead rivers, oxbow lakes, etc. with controlled outlets may be profitably managed through annual stocking with targeted species of fingerlings by the local fisher community, provided the water body is leased to them for long term tenure, they are well organized and have financial capacity to bear such expenses on their own.
 - Stocking in large floodplains, will only be encouraged where the flood plain has become enclosed and there is little or no natural recruitment and there are well organised communities that have demonstrated sufficient organisational and financial development and after they have successfully improved fishery management through conservation measures.
 - Empoldering flood plains to enable stocking should be limited to areas where it does not threaten biodiversity through loss of key habitat or prevent fish migration. It should not be allowed in areas where it would prevent the free flow of water during flooding or drainage of other flood plain areas.
 - Adequate measures should be taken to control and avoid stocking of genetically eroded fingerlings (for example due to inbreeding and hybridization) by sourcing fingerlings from certified sources of “wild” native species from hatcheries that have approved and certified brood stock management practices in place.
 - Exotic species that are currently approved for stocking i.e. common carp, may be stocked where suitable after approval of Department of Fisheries.
 - Introduction of new exotic species cannot be authorised before in depth studies have been undertaken including impact assessment studies. Imported fish must be quarantined before release.

- Re-establishment of indigenous species: *To restore self-sustaining populations of native fishes that have disappeared from particular water bodies.*
 - Should be promoted provided that those species originally were present in a location, a viable habitat exists, and the reasons for their local disappearance have been overcome.

Community based co-management

To promote the empowerment of fishing communities, to take a leading role in making and implementing decisions that ensure the long term future of their local fisheries, through gradual expansion of community based user organisations granted long term access rights based on local resource management plans guided by sound advice from appropriate government agencies.

- Scope of coverage: *To ensure sustainable and equitable fisheries, community based co-management will be formalised in water bodies where it has already been established through various projects, expanded to other water bodies in those same upazilas, and expanded to those upazilas where there are significant inland capture fisheries.*
- Community based organisations: *To provide a formal legal recognition of user rights, community based organisations where fishers have a leading role will be facilitated and organised*
 - The type of community based organisation appropriate will vary according to the location, it may be membership based (fishers), an organisation representing different stakeholder groups, or a set of volunteers from the community concerned to ensure sustainable fisheries.
 - They should be registered either under the social services department provisions (larger wetland management) or as co-operatives (smaller well defined fisher based organisations).
 - To support this effort capable NGOs will be encouraged to work with fishing communities and government agencies.
- Co-management bodies: *To recognise local fisher and resource user rights and provide a forum for advising them and assessing their performance, Upazila Fisheries Committees will be established and legally empowered to administer those fisheries where community based management is found feasible.*
- Government support: *To achieve co-management, UFCs and S/UFOs will have appropriate terms of reference and powers, and will be trained and supported in how best to work with fisher communities to empower them through a unit of specialists within the Department.*
- Good practice: *Those NGOs and government agencies that work to mobilise and empower fishery and wetland resource users should*
 - Identify all key stakeholders, and ensure that they participate in planning processes for the management of the fishery resources where the needs of the community including the poor are represented.
 - Community based organisations should be developed that follow sound management practices and that have decision making bodies that are transparent and accountable to the user community they represent.
 - All eligible members of community based organisations should participate fully in the preparation of local fishery management plans.
 - Linkages between community based organisations should be encouraged through the UFCs to provide coordination in management of larger water bodies.

- Agencies and organisations working to establish community based co-management in new water bodies should allow sufficient time in their support to identify stakeholders, undertake participatory planning, mobilise the community, build up local capacity and the institutional support arrangements, and follow a well defined gradual exit plan, so that future activities can be self sustaining.

Support to the Sector

- Extension: *Develop extension service providers to advise community based organisations on how to establish sustainable and equitable inland capture fisheries management.*
 - Help local communities, particularly poorer fishers and local government plan, implement and monitor inland capture fisheries management measures that will protect and enhance the aquatic natural resource base.
 - Help to organize, motivate and train fisher communities in fisheries resource management so that they can develop sustainable livelihoods by using local natural resources.
 - Campaign for and build awareness about potentials and importance of conserving and managing inland capture fisheries at different levels through appropriate messages and media.
 - Develop training for local government officials on local planning, integration of services and the needs for resource management.

- Research: *To ensure that research provides relevant information on the needs of the inland capture fishery to ensure its sustainable management whilst conserving the environment, the ecosystem and the biodiversity.*
 - Bangladesh Fisheries Research Institute should take the major responsibility to carryout need based research on inland capture fishery resources.
 - An annual workshop needs to be institutionalized that examines the problems and needs of inland capture fisheries, prioritises research activities, and feeds back progress and findings. This meeting must include policy makers, BFRI, Universities, other researchers and implementing agencies including Department of Fisheries, Ministry of Land, Local Government and other stakeholders.
 - Feed back from research must be disseminated to all interested parties for evaluation before future research needs are assessed.
 - Linkages to fishers should be established through formation of fishers' forum.
 - Linkages with international and regional research organisations should be strengthened especially those with experience in community based issues

- Education: *Ensure that a cadre of staff is trained and given the required skills to direct and assist in the management of the national inland capture fisheries.*
 - The fisheries syllabus in universities where necessary shall be revised and rearranged in accordance with current appropriate theoretical and practical knowledge. Important topics related with inland capture fisheries would be included, such as stock assessment techniques, population dynamics, resource conservation, fisheries economics, co-management, community mobilization and participatory management.
 - Theoretical and practical aspects of inland capture fisheries and wetlands should be introduced in text books at primary and secondary level and teachers trained in the importance of conservation and management of the resource.
 - Priority shall be given to research on national fisheries issues in higher studies of students.
 - Government, autonomous and private organizations shall provide necessary support for appropriate fisheries education in universities, colleges and schools.
 - Develop training and orientation programmes on community based co-management of fisheries for government officers involved in land administration and the members of the UFCs.

- Develop vocational training courses to support field workers and members from the private sector in providing support to the community management of fisheries.
- **Infrastructure development and management:** *To ensure that through careful planning infrastructure development does not adversely affect inland capture fisheries. Where structures exist ensure that mitigation measures are managed for the benefit of the wider community.*
 - Mitigate adverse effects on fisheries, as far as practicable, of existing water control infrastructure and road embankments, etc., and to avoid as far as possible such impacts from future development works.
 - Ensure active representation and participation of fishers in decision making in participatory community run systems for water management and operation of water control structures in polder and flood control and irrigation areas.
 - Ensure that operation of water control structures (sluice gates) is modified to allow water to enter flood plains during critical fish and spawn migratory periods so that adult and juvenile fish can move freely and repopulate enclosed floodplains
 - In embanked floodplains where fish friendly operation of sluice gates is not feasible the option of constructing fish passes should be assessed and where technically and economically feasible fish passes may be tested
 - New water control devices and structures (e.g sluices) should be fish friendly
 - Ensure that Environmental Impact Assessments are made for any project that considers undertaking any construction that might affect natural aquatic resources and the livelihoods of fishers.
 - Ensure cooperation with other agencies at central and local levels involved in infrastructure development and management e.g. BWDB, LGED, R&HD, Local Govt etc. and ensure that those agencies take proper account of the importance of fisheries and water bodies in their designs and implementation of infrastructure

Alternative Income Generating Activities

To identify and provide alternative income activities to enable poor users the opportunity to gain a livelihood outside of fishing, thus reducing the pressure on the fishing resource.

- **Seasonal Safety Nets:** *To ensure that seasonal restrictions on fishing in the interests of sustainability do not push households into poverty or cause additional hardship, additional income sources and support services will be developed.*
 - Work with support agencies to identify income generation activities for closed seasons and times with low fishing income,
 - Identify and promote the use of fishing gears and methods that are less destructive i.e. catch species that are not at risk of over fishing in these seasons.
- **Alternatives to fishing:** *To improve the access of poor fishing households to public and private sector services and opportunities so that they can move away from fishing for an income.*
 - The Upazila Fisheries Committees will through the respective Upazila Development Coordination Committees make links with and raise this issue with government agencies, NGOs and private enterprise working in the locality that may be able to help poor fishers develop alternative livelihoods through skill development, training, credit, etc.

- Service providers should ensure that these match the capacity and hopes of the target people and that any enterprises they are encouraged to adopt have viable markets and returns such that they will improve their living conditions.
- Where needed at the national level, links will be made between service providers and support agencies.

Regulatory Framework

To improve existing fisheries regulations and identify ways to enhance their implementation and relevance to the conservation and management of the fisheries resource

- Develop a regulatory framework that would enable and recognise the systems of community based co-management promoted under this strategy and that will support the long term access to fisheries and their sustainable use by local communities.
- Developing enabling regulations that provide a framework for and recognise the preparation of local fisheries management plans through fisher participation with appropriate technical advice.
- Provide guidance and recognition of local fishing rules and management actions made through such a framework including: a requirement to establish fish sanctuaries, restrictions on and deterrents to encroachment, drainage and dewatering of wetlands, control of over fishing, restrictions on gear use, stocking, etc.
- Take into account national directives which have been developed to provide an overall framework for the conservation of the resource.

Structures, Staffing and Resources

Develop and utilize the staff resources of Department of Fisheries and other government agencies in an effective manner to provide support to the capture fishery sub-sector by rendering services to the fishers and the communities through awareness building, mobilization and enforcement required in a sustainable and equitable manner.

- Work with the private sector to support and coordinate activities that will ensure the sustainable development of inland capture fisheries;
- Be able to advocate to other stakeholders on issues concerning the management and conservation of the inland capture fishery resource,
- Be supported by key individuals at headquarters and at field level to plan, execute and monitor capture fisheries activities;
- Have the required technical and social skills to support fishers/communities to implement locally feasible fisheries management tools and be able to provide advice on the technical management of wetlands to fishers and other users;
- Have capacity to address social aspects of inland capture fishery resources with sound linkage of NGOs working on these issues;
- Have capability to develop a legal framework for the governance of the inland capture fishery resources sector;
- Ensure that there are researchers with the required skills to address the needs of inland capture fisheries,
- Develop a cadre of staff dedicated to the management of inland capture fisheries, which is headed by a director and supported by deputy directors responsible for providing direction to the management of wetland areas and field staff who have the necessary background and training to ensure that the objectives of the strategy can be implemented at field level. Upazilas which are rich in inland capture fishery resources should be supported by an additional UFO level staff member.

Monitoring & Evaluation

To collect information on the implementation of the strategy in managing the resource to ensure that the given objectives are being met and planning can be adjusted to improve the targeting of efforts.

- **Baseline:**
 - Ensure that a data base of existing resources is established including ownership and access, e.g. through leasing, production and diversity of the resource and the living standards of users,
 - Ensure that a frame work for assessing production trends of the different categories of inland capture fisheries i.e. flood plains, beels, rivers etc. has been developed and can be implemented using the resources available to provide accurate information to planners.
 - Link in with Ministry of the Environment, environmental NGOs and other relevant agencies to establish a baseline on existing biodiversity;

- **Frame work for monitoring change:**
 - Ensure there is an effective system to regularly monitor the resource noting its changes in production, usage, management and nature of the resource.
 - Establish and implement systems to assess the impacts and improve the application of physical resource management interventions (such as sanctuaries, habitat restoration, stocking) and regulatory interventions (such as closed seasons, gear restrictions), and note the impacts on the fishers
 - Ensure that there is an effective system to monitor the performance of community based organisations in fisheries management.
 - Develop links for a two way flow of information between DoF and the community based organisations.

- **Management Planning and Policy Formulation**
 - Ensure that the information established in the baseline surveys and the subsequent monitoring and evaluation of the wetlands and inland capture fisheries is used to guide plans and practices so that the targets set in the National Fisheries Policy are met, and is used to inform decisions that improve on policies and plans.