GOVERNMENT OF BIHAR

DEPARTMENT OF ANIMAL AND FISH RESOURCES

DRAFT FISHERIES POLICY

2008

DIRECTORATE OF FISHERIES

THE GOAL

Development and management of fisheries and aquaculture resources for providing sustainable livelihoods to rural poor communities and overall economic growth of the State with due considerations to environmental well being, gender concerns, socio-economic and cultural aspirations of the people of Bihar with special attention to fishers and fish farmers.

A knowledge driven development organisation with dynamic, motivated and professional human resources that delivers quality extension services, co-manages resources with stakeholders, guides sustainable and equitable development, and is modern, accessible and accountable.

1. Need and Rationale for Fisheries Policy

The economy of Bihar is mainly dependent on agriculture, animal husbandry and fisheries. Fisheries and aquaculture sector play a key role in food security and employment generation as significant proportion of population depend upon fisheries, aquaculture and allied activities for their livelihood sustenance and income. Besides, the sector also generates precious revenue for the State. The importance of fisheries sector to the State economy has increased particularly after the creation of Jharkhand as a separate State. The State has two distinct land masses on either side of the holy River Ganga and is divided into 38 administrative districts, 21 in North Bihar and 17 in South Bihar. Bihar, lying in the heart of Gangetic plain, is blessed with fertile land resources though extreme hot and cold climatic conditions along with flood and drought situations are characteristic part of the geography.

The State is endowed with rich aquatic and fisheries resources in the form of rivers, flood plains, wetlands (*chaurs*), ox-bow lakes *(mauns)*, reservoirs, tanks and ponds. The main culture fishery resources of Bihar lie in over 43,000 ponds and tanks of variable sizes covering a total area of about 65,000 ha distributed throughout the length and breadth of the State. Flood plains and other wetlands locally known as *chaurs* are other major fisheries resources and measure about 45,978 ha which are found mainly in the basins of Kosi-Gandak river systems of North Bihar. Estimate prepared by Irrigation Department indicate several fold higher figure. Ox-bow lakes, locally known as *mauns,* are the discarded loops of meandering rivers which got cut off from the main rivers and is estimated to be about 9,000 ha. The 29 reservoirs in the State covering total water spread area of about 11000 ha is an important resource for fisheries development. Besides, 3200 km of rivers are the main resource for capture based fisheries in the State.

The annual fish production of the State, both from aquaculture and capture fisheries, has been estimated at 0.261 million tons against a demand of approximately 0.456 million tons. This has remained almost stagnant for many years. Evidently, there exists a wide gap between demand and supply, to the tune of 43%, which is quite paradoxical in view of the vast fisheries resources in the State. The unmet demand is partly met from supply of fish from other States. Similarly, the annual demand of fish seed in the State is over 900 million, while the production is only about 350 million from the 121 government fish seed farms, two corporate level fish hatcheries, and 26 private hatcheries.

On one hand the State has huge underutilized and untapped fisheries resources which offers immense potential for fish production and scope for the development of rural livelihoods, while on the other, the state still depends for supply of about half of its demand of fish from other states. The very low average productivity in all culture based fisheries eco-systems, poor socio-economic condition of fishers and fish farmers, lack of adequate public and private investment and capital flow into fisheries sector, lack of awareness about aquaculture as a viable and profitable economic activity, non availability of adequate and professionally skilled human resource, ineffective and redundant services delivery systems, poor infrastructure facilities, etc have all been responsible for the limited growth and development of fisheries sector in Bihar. *Thus there is an urgent need to bridge the gap between demand and supply of food fish and fish seed by effective and sustainable utilisation of available resources.*

However, a favourable legal and institutional environment needs to be created to meaningfully address these challenges in order to produce adequate and cheap food fish for all and improve the quality of life of fishers and farmers. A comprehensive and enabling fisheries and aquaculture policy is a *necessary* prerequisite to provide overall

direction, develop appropriate strategies, support implementation of development programs and mobilise resources for the full fledged growth and development of fisheries sector. In the changing scenario of globalisation and increasing market integration, a dynamic policy is vital to steer the fisheries sector through the higher growth trajectory by tapping the new opportunities and tackling the impending challenges. The overall objective of the fisheries and aquaculture policy shall be to increase the fish production on a sustainable basis to ensure food and livelihood security in the rural sector.

Within this broader context, the specific objectives of Fisheries Policy are:

1. *To promote development and management of all fisheries and aquaculture resources to become a food and seed fish surplus State in an ecologically sound, economically viable and socio-culturally compatible manner*
2. *To provide adequate, sustainable and equitable livelihood to fishers and fish farmers, and ensure availability of cheap and quality fish to all*
3. *To generate entrepreneurial and employment opportunities, and facilitate creation of necessary infrastructure facilities through public and private investment in fisheries and aquaculture sector*
4. *To conserve and manage the fisheries resources and fish biodiversity for its sustainable utilisation*
5. *To create wider social awareness about importance of fisheries and aquaculture and promote consumption of fish as wholesome food*
6. *To transform the Directorate of Fisheries into a professional agency providing extension services to fishers, farmers and*

entrepreneurs following a people centered approach to development

2. Data Gathering and Development Planning

Timely, complete and reliable statistics on potential resources, status of utilisation, resource wise and species wise production and productivity levels, catch and fishing effort, different socio-economic parameters and market information is essential for formulation of relevant policies, programs and action plans. At present, there is no established and fool proof system for systematic and regular collection of data on fisheries in the State. Only crude estimations and approximations with wide margins of error form the basis of development planning and management.

The policy envisages institutionalising a mechanism for systematic collection, verification and updating of timely, complete and reliable statistics on various physical, biological, economic and social parameters of fisheries as per the nationally and internationally agreed format. Involvement of various stakeholders particularly the producer groups will be strongly encouraged in both collection and verification of various statistics. Measures are to be initiated for proper categorization, analysis, and wider dissemination of data thus generated and maintaining a computerised database for easy retrieval. Remote sensing and Geographical Information System would be deployed for survey of various resources especially the open water bodies to be followed by ground truthing.

3. Development of Aquaculture in Ponds

Tanks and ponds of water spread area less than 10 ha in sizes that can be classified as ponds total an area of about 65,000 ha. Of these, about 22,000 ha are constituted by individual ponds of sizes less than 0.5 ha while about 26,500 number of water bodies with water spread area between 0.5 and 10 ha constitute a cumulative water

spread area of 43,000 ha. Presently, aquaculture in ponds and tanks remains the main support for livelihood of the poor fish farmers in rural areas. However, the productivity of ponds is only about 800 kg / ha which is much below their potential of 3000-5000 kg/ha/year. Fragmented and small size of land holdings due to higher growth rate of population, heavy siltation and poor physical condition of ponds, and traditional culture practices have made the pond aquaculture remain as a subsistence activity.

The policy proposes to bring aquaculture at par with agriculture in terms of credit, taxation, energy charges, water tariff and land allocation owing to the similarities between the two sectors in the resource use pattern, providing livelihood support to fishing and farming households and further fisheries development in the State. The policy envisages that all types of water bodies below 10 ha in size shall be brought under improved scientific composite fish culture and achieve an annual average productivity of 3000 - 5000 kg / ha. This is to be made possible by restoration and renovation of existing water bodies, creation of new water bodies, imparting training on appropriate technologies, extension support and ensuring availability of all inputs and support services including credit facilities. Also, support under various schemes is to be mobilised for renovation of the Govt. ponds.

4. Development of Fisheries in Ox-Bow Lakes

An estimated 9,000 ha of water spread area varying in size from 4 to 400 ha in the form of *o*x-bow lakes *or mauns* offers immense scope for scientific culture based fisheries development supporting a sizeable number of fishers and small and marginal farming households. These lakes are the discarded loops of meandering rivers, mainly in the Gandak basin, which gets disconnected and connected with the main rivers during floods or rainy season thereby drawing water. At present

mainly capture fisheries is practiced, and only about 2700 ha area i.e. less than one third of available area has been brought under culture with average productivity of 300-400 kg/ha/yr. The lakes have been subjected to a number of stress factors like heavy infestation of aquatic weeds, siltation, encroachment, habitat degradation, etc leading to considerable decline in its physical expanse and aquatic biodiversity.

The policy seeks to bring almost every ox bow lake into culture based fisheries by the year 2020 and produce nearly 9000 tons of fish production every year. The policy encourages community participated management of the ox-bow lakes by active involvement of local fishing / farming communities. The leasing policy shall ensure long term leasing of water bodies to facilitate investment, inculcate a sense of ownership and sustainable production approach. The leasing priority, lease rent, terms and conditions are to be streamlined and subjected to periodic review. Cluster development approach is to be adopted to ensure easy and round the year availability of adequate and quality fish seed. Comprehensive mapping and survey for proper planning, renovation and restoration of oxbow lakes to make them suitable for fish culture, regular training and technical support are some of the most essential part of the management strategy so as to help them the involved local communities sustainably manage these ecologically significant resources.

5. Development of Fisheries in Floodplains and Wetlands

The northeast part of Bihar has a long stretch of flood plains in Gandak and Kosi basins. A series of shallow lakes locally known as *chaurs* exist in these areas to the tune of about 46000 ha. These water bodies support a rich biodiversity, but are biologically sensitive and fragile in nature. They are also the repositories of variety of freshwater food and ornamental fishes. At present, a mainly capture fishery is being practiced with production being as less as 40 -50 Kg

per/ha/year. Greater colonization of macrophytes and habitat degradation are also major problems. These water bodies, however, have shown high fish production to the tune of more than 1000 kg/ha/year in certain well managed pockets. The property regime in the floodplains is unique wherein many individual farmers own only part of the cropping land under submergence, making any culture and management practice conditional upon collective effort of the farmers. Some water spread areas cover land areas under both private as well as State ownerships.

The policy recognizes this unique property regime and envisages co-operative / collective management of these water bodies wherein crop cultivation is integrated with fisheries (crop cultivation under individual management while fish culture under collective management). Thus this policy visualizes cluster development of water logged areas for food and employment without altering the nature of the ecosystem. Since water logged areas have submerged land holdings of many farmers, community based collective / participatory management would be the best and successful model of development. Farmers would be mobilised for the same so as to reach mutual commitments and make shared and informed decisions while reducing conflicts. This would minimize the uncertainty over resource use and finally farmers would share both the costs and benefits of their efforts. Demonstration of the possibility and profitability of aquaculture in *chaurs* through pilot scale intervention, encouraging the involvement of NGOs for mobilising and organising the farmers, motivation and training to farmers, facilitating different models of contractual farming arrangements, mobilising inputs, credit and marketing support under different schemes shall be the major thrust areas to achieve an average productivity of 500 to 700 kg/year/ha.

Recognising that the policy statement of Department of Water Resources '*water logged areas like chaurs and flood plains should not*

be drained out, rather they should be retained as it is and brought under fish culture' would greatly benefit fisheries development, Department of Animal and Fish resources would work closely with Department of Water Resources and Department of Agriculture for integrated development of floodplains.

6. Development of Fisheries in Reservoirs

As in other states, reservoirs in Bihar are primarily for irrigation purpose. These reservoirs are highly productive from the biological point of view as they get adequate light and optimum atmospheric / water temperature which are conducive for growth of fish. Reservoirs in Bihar are relatively small having water spread area less than 1000 ha each. Present average fish yield is below 20 kg/ha/yr which is below the national average. The low yield of fish from reservoirs in Bihar are attributed to many factors including dependency on the rains and the catchments for water, lack of quality yearlings for stocking, inappropriate use of gear and craft, improper management regime, and other institutional and management factors like ailng co-operatives, lack of appropriate policy, lack of fishing and management rights to Department of Animal and Fish Resources, etc.

The guiding principle of fisheries development in reservoir is productivity enhancement coupled with livelihood development and revenue generation. The policy proposes to transfer the fishing and management rights of all reservoirs to Department of Animal and Fish Resources for the purpose fisheries development. The policy gives priority of lease to the displaced / affected population and traditional fishers by forming fishers' co-operatives, fishers' associations and SHGs as a means of their rehabilitation process. In their absence, the reservoir will be leased out to the group of unemployed youth, private entrepreneurs, public undertaking, etc through open auction. Lease period will be long term of ten years within stipulated terms and

conditions based on revenue sharing and or fixed lease rent model. The lease amount is to be determined based on the productivity of the reservoir and the lessee at stake. An appropriate management plan for each reservoir is to be evolved jointly by the Department and the lessee for promoting culture based fisheries under co-management system to ensure optimum stocking with desired size and species ratio of seeds, introduction of appropriate fishing craft and gear, observance of closed season, efficient functioning of fishers' co-operatives / SHGs, facilitate marketing and ensure equity of benefits. The emphasis will be empowering the local fishing communities and their organisation so that they can effectively participate in the management of reservoir hand in hand with DoF.

7. Seed Production

Quality fish seed is the most critical input in aquaculture. Easy and round the year availability of adequate and quality fish seed throughout the growing season at farm level is a determining factor in furthering aquaculture growth. The present seed production is about 350 million while the demand is 600 million where the demand gap of 250 million is met by supply from other States and natural collection (10-20%). There are two government run and 26 private hatcheries in the State besides 121 government fish seed farms most of which are non-functional. Lack of trained / skilled personnel in designing, construction and operation of hatcheries, lack of adequate number of hatcheries, particularly in Eastern and Western parts of the State, issues of encroachment, weed infestation, lack of reliable ground water supply in most of Govt. seed farms, poor maintenance and management of seed farms, depleting natural stock in rivers due to unregulated fishing, poor and inadequate transport facilities and a lack of mechanism for supply chain management are the pertinent issues to be addressed. During the coming decade the State will be in need of over 1,000

million fingerlings which would require production of 8,000 million spawn by 2020 so as to bring the potential area under aquaculture.

The policy envisages following measures to holistically address the various issues. Revival of existing government fish seed farms and hatcheries through public private partnership mode with involvement of unemployed fisheries graduates and entrepreneurs, modernization and renovation of all the seed farms, commissioning of 100 new private carp hatcheries in the State, creation of 500 ha of nursery and rearing space in next five years and ultimately 650 ha by the end of the year 2020 in both public and private sector, establishing at least one fish farm and hatchery in each district under government and/ or private sector, promotion through special schemes fish seed production among farmers and encourage group of seed growers in all major pockets through special schemes to ensure easy and year round availability of quality fish seed of desired species at the farm level.

8. Diversification of Aquaculture

Bihar has enough potential for diversification of aquaculture activities like introduction of freshwater prawn farming, culture of air-breathing fishes, ornamental fish culture and propagation of ornamental aquatic plants, integrated farming system, etc. The policy seeks to promote these activities.

The giant freshwater prawn *Macrobrachium rosenbergii* (scampi) is a suitable species to be cultured in Bihar especially with carps. Entrepreneurs will be encouraged and supported to develop scampi seed hatcheries to meet the local demand of seed. Similarly, catfishes possess considerable commercial importance due to their high consumer preferences and price. *Clarias batrachus*, *Heteropneustes fossilis* and *Anabas testudineus* are three of the most popular air-breathing catfishes which are well adapted to the *chaur* ecosystem.

Adequate technical and financial support will be made available to farners and entrepreneurs for establishing cat fish hatcheries for commercial production of seed. Extension system will be strengthened to popularize cat fish culture and ensure easy availability of cat fish seeds and popularize commercial production with annual additional 0.5 to 2 tons of cat fish / ha.

Important ornamental fishes like *Chanda ranga, Chanda nama, Colisa fasciata, Colisa lalia, Gudusia chapra* and others like sand loach, tiger barbs *Puntius* sps, etc. are found in *chaurs* and lakes. Specialized training programme for fisher and especially women shall be arranged for identification and culture of ornamental fishes. Integrated fish farming will be encouraged wherein poultry, duckery, piggery, cattle rearing, floriculture, horticulture and food grain production will be integrated at the farm level to maximize the return per unit land and water resources and minimize the cost. Proper interventions would be done to motivate farmers and converge different schemes owing to different commodities for benefit of farmers. The concept of small-scale aquaculture is an important element of family farming system. A section of small fish inhabiting flood plains and ox-bow lakes are vanishing fast. Such fishes are considered trash / weed fishes under composite fish culture. Now they are found to fetch higher market price than carps. Efforts will be made to harness such indigenous species by incorporating them in the fish production program. Such an effort will also help protect the declining fish biodiversity.

9. Management of Riverine Fisheries

The riverine resources consist of 3,200 km of rivers across the State and 1,00,000 ha of perennial riverine command area. Capture fisheries is practiced to some extent with declining fish catch due to habitat degradation, pollution of rivers upstream, use of destructive fishing

practices, exploitation of brooders and juveniles, etc. Many of the fish species which were very common in the past are not present in good numbers now. Further the mean size of many commercial species has reduced over a period of time.

Conservation based regulatory approach will be the guiding policy objective. The policy aims to reduce further degradation of the riverine ecosystem, conserve the aquatic resources and enhance the productive capacity of the resource in the long term. Accordingly, the existing guidelines related to fishing in rivers, licensing terms, prohibition of destructive practices, etc will be reviewed, streamlined and strictly implemented. The local fishing communities, conservation oriented NGOs and other Community Based Organisations will be actively involved in conservation and management of riverine resources. Select stretches of rivers will be protected as sanctuaries. One fish will be identified as a State Fish in order to create a wider social awareness and inculcate conservation principles among the public.

10. Conservation of Aquatic Biodiversity

The fish genetic resources of Bihar are represented by variety of species. The State has a golden history of numerous aquatic fauna which were abundant in the past. Man made interferences have now changed the scenario and many species which were abundant in the past are now no where or on the verge of extinction. In this context it is necessary to take serious steps for in situ conservation of fish diversity. Developing strategies for in situ conservation of native aquatic flora and fauna should be an important thrust area and efforts shall be made to develop fresh water protected areas. Simultaneously restricting the undesired exotic fauna of fishes is also necessary. Though prohibitory provisions have been made in Bihar Water-bodies Management (Amendment) Act 2007, awareness among people is also important. Extension service system would be strengthened to

make people and farmers aware about the disastrous effects of culturing undesired, exotic and banned species of fishes. Similarly introduction of unwanted exotic species in pond aquaculture is affecting fisheries and if not prohibited will have a devastating effect.

11. Leasing and Management of public water bodies

Revenue water bodies were transferred to Fisheries Department with an aim to develop scientific aquaculture in them and to develop these water bodies with subsidy based credit from financing institutions. Due to interferences at various levels, inefficient extension delivery system and poor lending by bankers as well as fisheries co-operative societies the desired development was not achieved. This it calls for a holistic approach and multidimensional intervention to make fuller use of these water bodies for maximising fish production and over all benefits of fishers. It also requires a sustainable management approach. The process of leasing shall also be transparent as well as sensitive to all these aspects.

Accordingly, the Bihar Water bodies Management Act 2006 with its Amendment in 2007 sought to address all these issues. The term 'fisherman' has been defined as someone whose traditional occupation is fishing and fish culture so as to exclude the middlemen from leasing the Govt. ponds on priority. Also, categories of water bodies for short term (five years) and long term (ten years) settlement are clearly defined. It prohibits fishing in the rivers between 15th June and 15th August, prohibits use of fishing net or gill net with mesh size less than 4 cm, prohibits use of dynamite or poison in rivers as well as ponds with penalties. Limitations and loopholes in the present system of settlement like discretionary powers of DFOs arbitrary application in deciding the period of lease, and revenue fixation, allotment of water bodies to entrepreneurs / NGOs / SHGs etc, irregularities and litigations in settlement would be addressed by suitable amendments. The

Department will critically monitor and review the performance and impact of these Acts and accordingly revise the guidelines to achieve the stated policy objectives i.e. sustained higher production and fishers' livelihood.

12. Marketing and Value Addition

People of Bihar relish fish consumption in general. The ever-increasing demand for fish as food demands that apart from increasing fish production, the complete supply chain be efficiently managed to minimise post harvest losses, and maximize value for both the primary producers and final consumers.

The policy aims at developing and maintaining a fast and reliable marketing network to reduce post-harvest spoilage, better price for fish producers besides creating gainful employment opportunities. Federations of fisher co-operative societies, SHGs of women and entrepreneurs would be motivated to establish co-operative marketing network of skilled farmers, transporters and retailers. Organised modern hygienic wholesale and retail markets exclusively for the fish with waste management facilities would be established with stakeholder participation across the State. Assistance would be given for deep freezers, insulated vans, live fish careers and ice plants as per norms. Special training courses would be designed to promote value addition of aquaculture products. Women SHGs would be trained and financially supported for value addition of fish and their marketing. Wider public awareness will be created about fish as a wholesome health food through mass media and publicity campaigns so as to increase fish consumption. Sale of fish and fish products on the pattern of SUDHA/Mother Dairy/PARAG by the Fish Federation is to be considered.

13. Human Resource Development

The HRD in fisheries sector shall take into account the HRD of fishers' communities, farmers, Directorate of Fisheries staff, NGOs and other stakeholders involved in fisheries development. The technical know how as well as the managerial capabilities of these human resources to be enhanced and strengthened. The present scenario is charecterised by very low level of literacy, poor resource base, lack of awareness and technical know how among fishers and farmers on the one hand and lack of adequate number of need based and skill oriented training programs at block and district levels on the other. The policy proposes to provide field oriented training to alteast one lakh fishers and farmers on aquaculture, fisheries co-management, value addition and marketing to bring about major transformation in fisheries development. Illustrated, detailed, step by step and easy to follow field guides on relevant aquaculture practices will be made available widely to fishers and farmers.

The training and delivery mechanism at the State level is ill equipped, both conceptually and logistically, to meet these challenges at present and requires major reforms. Inadequate and poorly skilled staff at different levels, lack of motivation and desire among the staff for field oriented work, lack of sufficient career development opportunities and refresher training programs, absence of effective monitoring mechanism and accountability, competing and or conflicting role of DFOs/FEOs as settlement officers and extension workers, absence of extension staff at the Block level, non-integration of the Engineering cell / staff within the Department, very poor infrastructure are some of the systemic HR issues constraining the development process.

Hence, the policy assigns high priority to all round human resource development with adequate financial outlay and infrastructural support. The recruitment policy is to be accordingly

reformed to recruit requisite number of professional fisheries graduates for developmental work. Career advancement shall be linked to the performance evaluation. Sufficient promotional avenues and appropriate incentives coupled and accountability will be integral part of the policy. Need based short term and medium term refresher training programs shall become a continuous and in-built program for capacity building and competency development of the staff at various level. The content of the training programs to include both the technical knowledge as well as the societal and managerial skills like community organisation skills, participatory techniques, communication skills, team building skills, ability to work with NGOs / SHGs. Development management programs for senior officers, project management programs for middle level officers and technical training for junior staff will be major focus. The State Fisheries Research Institute will be strengthened and upgraded into Fisheries Research and Training Institute to cater to the training needs of fishers, farmers and the field staff.

14. Extension Service Delivery and Support System

Strengthening and reorientation of extension services deserves highest attention to transform the Directorate of Fisheries into a professional service providing agency to fishers and fish farmers as well as for effective implementation of various development projects and schemes. At present, the State fisheries department has become predominantly a *desk oriented regulatory department* instead of *a field based and client oriented extension department*.

The policy recognises that it requires a major restructuring as well as change of mind-set, and calls for a paradigm shift from the classic transfer of technology approach which is also mainly subsidy incentive driven to participatory extension system wherein the potential and strength of target group is harnessed for demand driven and effective

extension services delivery system. The extension system would be streamlined to provide not just technical support but a bundle of services covering the entire value chain mobilisation of input support including credit and insurance support, market information and linkages, and coordinating social support services from various welfare and development agencies (Central / States / NGOs) for the clientele of fisheries sector. Policy for incorporating travel support including means of travel (motorcycle) shall be an integral part of any development package for the development of fisheries / aquaculture. Besides they also deserve adequate support in terms of fund and means for undertaking frequent travels.

The policy also places emphasis on economic and social empowerment of the fishers and farmers which in the long run would ensure sustainability and equity. Realising that the public extension machinery alone can not be able to fulfill all the requirements, the policy proposes to make the progressive farmers and fishers as partners and extension agents who would be more convincing among the fellow farmers. Also, provisions for creating and using para-professionals, NGOs, Community Based Organisations for effective service delivery would be made. Commensurate with the envisaged responsibilities for the Directorate of Fisheries, increased financial and executive autonomy would be accorded.

The policy recognises the potential of Information and Communication Technology (ICT) as a cost-effective and interactive mechanism for delivering relevant information and knowledge to the stakeholders. The staff will be trained on the use of ICT. In line with the National e-Governance Plan and the proposed State Data Centre, the Department of Animal and Fish Resources will work closely with the Department of IT and NIC to gainfully harness ICT for effective service delivery. DoF will focus on creation of relevant content and updating it so as to derive maximum benefit from the proposed integrated models

of service delivery wherein all the agriculture, market, rural development, and citizen related services and information will be bundled through a single ICT platform at the village level. The concept of one stop aqua shops may be taken up on pilot scale and demonstrated to the aspiring entrepreneurs/NGOs/Co-operatives. This will improve easy access, save time, and reduce cost for farmers and fishers. The planned Aquarium House in Patna will become the central hub.

15. Fishers Livelihood and Welfare

The socio-economic condition of fishers, small and marginal farmers are very low with widespread poverty, low literary level, higher birth rate and poor health standards. Availability and access to social services like primary health, sanitation, education, public distribution system, institutional credit and other extension services are very limited. Besides, high rate of indebtedness to local money lenders, alcoholism among fishers, higher degree of occupational uncertainty and hazard are some of the major concerns. The majority of fishers in our State lead a life at the subsistence level though it is not simply their profession, but a way of life. Not only fishermen but also the fisherwomen actively involved in harvest and marketing activities are more vulnerable. Their personal lives are subjected to fatal accidents causing death or disabilities. Fish culture in Bihar is prone to flood as well as drought. Poor fishers are the worst affected one. Post flood situation is so precarious that farmers are not in a position to invest on feed and seed from their resources.

The policy lays a special emphasis on improving the over all living standard of poor fishers and farmers, and to bring them above poverty line. Special attention shall be given to nearly 49.60 lakh population (as per GOI statistics-2003 **kindly check the figures**) of fishers towards increasing the per capita income of the family, compulsory primary

education to every child, housing, safe drinking water and other amenities, and group accident insurance coverage to 2,00,000 active fishers, fishing gears, and aqua farms, etc. Registration of fishermen and issue of ID cards for fishers and their family members would be done as a mandatory measure. Effective and fast assistance would be ensured from the Calamity Relief Fund, insurance companies and other such institutions. The Department will coordinate mobilisation of all the resources to provide welfare services to fishing communities like housing, drinking water facility, primary health care, compulsory primary education for all fishers' children by 2012, community centres, etc. Fisher women and children would receive greater attention.

16. Fisheries Co-operatives

Presently, the co-operative societies are plagued by economic inefficiencies, absence of democratic processes, mismanagement and misappropriation of benefits by the dominant few, lack of transparency and accountability, etc. The policy is alive to the fact that active interventions are necessary to strengthen and restructure Fisheries Co-operative Societies in order to make them as a democratic grass root level engine of fisheries development, and ensure equity of benefits particularly to their poor fisher members.

The policy strives to initiate following measures to ensure greater degree of accountability and equity: creating wider awareness about the rights and responsibilities of members and democratization of election processes; all societies shall have joint account preferably in nationalized banks; all members shall have photo ID cards and the list to be available for public scrutiny; incentives and awards to best performing societies based on over all production as well as socio-economic parameters; power of registration of societies and settlement of their disputes to be given to Dept. of Animal and Fish Resources as in other neighbouring States of Madhya Pradesh, Uttar

Pradesh and West Bengal; All transactions only through cheque/DD and no cash transaction; extension of lease period based on performance; and regular independent survey of socio-economic status of members about the impact of co-operative societies. Also, technical and promotional cells in apex fisheries federations shall be promoted to bring professionalism in the fishers' co-operatives and make them main vehicles of promoting livelihood development through scientific aquaculture. Secretaries of co-op societies shall be minimum matriculate pass and preference will be given to fisheries graduates / persons having knowledge in fisheries. To encourage education among fisher communities, preference as office bearers shall be given to fishers whose children are school going or educated. Implementing provisions of RTI Act would get a priority focus.

17. Effective Linkages and Coordination

Fisheries and aquaculture development, being dependent on water and land resources having multiple uses and demands, requires effective linkage and co-ordination with many Departments like Water Resources, Agriculture, Co-operatives, Environment and Forests, Revenue, Command Area Development Authority, Energy etc. Also for effective implementation of many schemes as well as for convergence of funds interdepartmental co-ordination is vital. Weak and ineffective interdepartmental co-ordination particularly at district level and below is one of the crucial missing links throttling the harnessing of full potential.

The policy seeks to institutionalise the linkages and coordination with relevant Departments at different levels. Revival of Fisheries co-operative societies and making them effective at grass root level will be carried out by active coordination with the Department of Co-operation. Encroachment of govt. seed farms as well as other govt. land (ponds/tanks, water bodies) for housing, agriculture etc are to be

identified and recovered with the coordination of the concerned DM. Also, effective linkages and co-ordination with Departments of Water Resources, Revenue, Command Area Development Authority etc at District and State levels would help map and update the database of water resources including their ownership, speedy implementation of renovation/civil works of ponds, *chaurs* and *mauns.* To ensure optimum availability of water for aquaculture due to competing demand for water resources particularly for irrigation, proper linkages and coordination with Departments of Water Resources, and Agriculture at District level through the DM who also acts as Chairman of FFDA would become essential. Conservation of native fauna and effective control of pollution in open water bodies would be taken care of by coordination with the Department of Environment and Forests.

Various Plans, programs and funding like State Plans, Central Plan outlays, externally funded programs/projects, National Fisheries Development Board, Institutional funding etc shall be streamlined at state level for optimum utilisation of funds and effective implementation of programs. Similarly, linkages at district level would be strengthened for convergence of funds available under different schemes like Rastriya Sam Vikas Yojana, Mukhya Mantri Vikas Yojana, Rural Employment Guarantee Scheme etc and integrate them for optimum and speedy utilisation for development. Linkages and coordination with the State level Department of Institutional Finance and Program Implementation would ensure that fisheries and aquaculture are included in district credit plans, and are considered as a separate sub-sector for NABARD funding being routed through lead banks in each district.