

ODISHA FISHERIES POLICY, 2015



GOVERNMENT OF ODISHA

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1. Preamble

Odisha is one of the major maritime States, offering vast scope for development of inland, brackishwater and marine fisheries. The State's 480 km long coastline with 24,000 sq. km area within the continental shelf has ample potential for marine fisheries development. Freshwater resources of the State are estimated to be 6.76 lakh ha comprising 1.25 lakh ha of tanks/ponds, 2 lakh ha of reservoirs, 1.80 lakh ha of lakes, swamps & jheels and 1.71 lakh hectares of rivers and canals. The State's brackishwater resources are of the order of 4.18 lakh ha with a breakup of 0.79 lakh ha of Chilika Lake, 2.98 lakh ha of estuaries, 32,587 ha of brackishwater area and 8,100 ha of backwaters. By judiciously harnessing these resources, the fish production from capture and culture based capture fisheries could be substantially augmented to meet the domestic market demands, increase in export apart from creating employment and income generating opportunities for the rural poor and enhance their food, nutritional and livelihood security.

The fishery sector in Odisha is faced with low levels of literacy and relatively high levels of debt. This calls for a paradigm shift in the way fisheries is regulated and managed. The challenge, in this context, is to develop a long term policy and strategies allowing for the balanced and sustainable management and development of the fishery sector in Odisha. A new policy environment could spur overall development of the fisheries sector.

In the marine fisheries sector the Odisha Marine Fishing Regulation Act and in the Inland fisheries, the Reservoir Fisheries Policy 2012 are the principal legislation/policy for managing fisheries. A clear and comprehensive Fisheries Policy supported by a legal and institutional mechanism, therefore, is an essential pre-requisite for preparation of a new legislation to effectively address sectoral concerns.

This document presents an assessment of current fisheries policy, a broad overview of the status of fisheries development and management in Odisha, concentrating on the basic objectives of fisheries policy, the essential structural and administrative framework for implementing it, and the opportunities for improving it.

2. Odisha Fisheries – Situation Analysis

The total fish production of the State in 2013-14 was 4,13,000 tonnes. The overall increase in fish production during the past five years from 2007-08 to 2012-13 was in the order of 63,660 tonnes, with an annual growth rate of about 3 percent. While the fish production from the inland fisheries (Freshwater and brackishwater) resources has increased from 2,18,716 tonnes to 2,94,000 tonnes, the marine fish production declined from 1,30,767 tonnes to 1,20,000 tonnes during the corresponding period. The annual per capita fish consumption presently is 9.13 kg in Odisha as against the national per capita fish consumption of 9.8 kg.

The annual export of marine products from Odisha during the last five years ranged between 14,135 tonnes in 2008-09 and 30,980 tonnes (2013-14) valued approximately at ` 357.88 crore to ` 1800 crore. Contribution of Odisha to the present level of marine products exported from the country is about 2.5 percent in terms of quantity and 4.8 percent in terms of value.

For developing inland fisheries, the Department of Fisheries has 106 fish farms, out of which 27 are fish breeding farms with hatcheries and the private sector has 89 fish breeding farms. Presently there are 108 fish seed hatcheries in Odisha with the designed capacity for producing around 70 crore fry.

The average productivity of the reservoirs in the State was around 9.3 kg per ha as compared to the national average of 15 kg/ha. As a result of application of appropriate management measures such as continuous stocking of advanced fingerlings based on the provisions as contained in the State Reservoir Fisheries Policy notified in the year 2012 the productivity of the reservoirs has increased to 93 kg/ha. where intervention made.

Freshwater aquaculture in the State is being promoted through district level Fish Farmers Development Agencies (FFDAs). These FFDAs have so far brought under scientific fish farming in 62,167 ha in 30 districts with an average fish productivity of 2.13 tonnes/ha.

Out of the total potential brackishwater area of 38,575 ha, 32,587 ha has been found suitable for brackishwater aquaculture. So far, 16,387 ha brackishwater area has been developed, of which 10,174 ha has been brought under shrimp culture. The shrimp production (monodon) during 2012-13 was 13,227 tonnes at the rate of 1300 kg/ha/yr. which has been increased after introduction of vannamei. There are 14 shrimp hatcheries with an installed annual capacity of 50.5 crore post larvae and about 73 percent (36.7 crore) of the total installed capacity is produced every year.

There are 17,973 fishing crafts operating in the State's coastline for marine fishing, of which 1,754 are mechanized, 6,734 are motorized and 9,485 boats are non-motorized. Trawlers account for 85 percent of the mechanized boats. There are one major fishery harbor (FH), three minor fishery harbours and 69 fish landing centres in Odisha. There is a proposal to construct 3 minor fishing harbours at Chandipur (Balramgadi of Balasore district), Chudamani (Bhadarak district) and Bahabalpur (Balasore district). The major fishery harbour at Paradeep and three minor fishery harbours one each at Gopalpur, Nuagarh (Astarang) and Dhamra Stage-I have been completed and commissioned. Out of 28 fish landing centres which were targeted to be provided with a jetty, 23 have been completed and the remaining 5 are under various stages of construction. National Fisheries Development Board (NFDB) has approved and provided fund for upgradation of 7 FH/ Fish Landing Centres.

There are 3,878 fishermen villages of which 813 are marine and 3,065 inland. The total fishermen population in Odisha is 14,80,704 comprising 6,05,514 (CMFRI census 2010) are marine fishermen and the remaining 8,75,190 are inland fishermen. There are about 1,69,000 active marine and about 1,89,000 inland fishermen. The literacy rate is 48.65 percent of which male literacy is 62.37 percent and female literacy is 34.40 percent. The number of active fishermen cooperatives in the State is 638 (78 marine and 560 inland) with a total membership of 99,294 (19,651 marine and 79,643 inland, source: CMFRI Census 2010). Most of the fishermen villages lack basic amenities like communication, housing, electricity, drinking water, health and sanitary facilities.

The Plan outlay for development of fisheries in Odisha increased from ` 27.00 crore in the 5th Five Year Plan to ` 459.108 crore in the 12th Five Year Plan.

3. Issues and Challenges

The key issues that are currently faced by the fisheries sector in Odisha inter-alia include:-

- i. Resource depletion aggravated by use of destructive fishing gears and methods;
- ii. Inadequate information on the fisheries resources and the state of the aquatic environment to guide management decisions;
- iii. Inappropriate regulatory framework and inappropriate mechanisms for controlling access to fisheries resources;
- iv. Inadequate monitoring, extension and enforcement mechanisms;
- v. Inadequate mobilisation and involvement of the communities in development and management of fisheries resources;
- vi. Inadequacy of extension services critically hindering capture fisheries and aquaculture development;
- vii. Inadequate fisheries infrastructure;
- viii. A difficulty in imposing any limitation or stringent action on over-fishing, as fishing is a livelihood option for majority of poor people;
- ix. Low levels of literacy and relatively high levels of debt;
- x. Siltation of the fishery harbours and fish landing centres because of the natural littoral drift, and human pressures making most of them non-operational;
- xi. Majority of small fishing boats lack modern fishing facilities and equipment;
- xii. Clandestine import and introduction of disease infected fish/ shrimp seed in culture systems;
- xiii. Introduction of alien and incompatible fish species in aquaculture systems;
- xiv. Natural calamities such as unprecedented rain, cyclones and floods, leading to destruction of coastal structures, fish/ aquaculture ponds and systems;

4. Rationale

In the background of untapped potential to be harnessed for livelihood security and economic growth, evidence also exists for over-exploitation in certain areas as well as existence of untapped fisheries resources and destruction of ecological niches.

Promotion of cost-effective and environmentally sustainable methods of harvesting and production; spread of know-how for maintaining high standards of storage and processing of produce for value addition; and effective linkages and networks for profitable marketing of products, are limited due to inadequate infrastructure facilities, information and communication channels, up-to-date capacity and expertise in the state. These limitations need to be addressed adequately for sustainable development and management of the fisheries sector for pro-poor economic growth.

Regulatory instruments such as the Reservoir Fisheries Policy and the Odisha Marine Fisheries Regulation Act (OMFRA), are operational in the State. These Acts even though have immensely helped the State in developing and managing the fishery resources, they do not consider some important aspects for sustainable fisheries development and management in the state in the present day context of global change including:

- ❖ Sector-wise rules and regulations based on the current status, stage of development in each sector and integration/ coherence with the allied sectors such as environment and forests, agriculture, irrigation, etc.
- ❖ Strict enforcement of the provisions in the fisheries Act/ Rules and Regulations for sustaining the fisheries for the future generations.
- ❖ Community participation/ co-management in resource conservation, development and management for ensuring better livelihoods, food, nutritional and social security to the fishers.
- ❖ Integration of coastal and marine ecosystems, conservation of freshwater, brackish and marine fish stocks and protection of inland and coastal wet lands and critical habitats.

The rationale underlying fisheries management, exploitation and development is beginning to change. Where, once the focus was primarily on producing greater quantities of fish, the emphasis is now gradually moving, through concepts such as responsible fishing and sustainable management. This change in focus presents new challenges to fisheries administration.

As our development challenges have evolved and our understanding of the concerns in sustainable development have sharpened, there is a need to review the earlier objectives, policy instruments, and strategies for fisheries management and development in Odisha State. This dynamic change requires an evolving and flexible policy framework

with a built-in system for monitoring and review, and wherever necessary, a provision for revision.

A comprehensive fisheries policy along with derivative strategies that take into account the present status of the fisheries management and development are essential for the State of Odisha to promote and facilitate economic activities in fisheries sector as a means of enterprise promotion and livelihood security. The Policy aims to address sustainable utilisation, protection/ promotion of the nutritional security, livelihood security of the fisher community, gaps in the legal and regulatory framework and their enforcement, gaps in the administrative structure and processes, financing mechanisms including subsidies, technology and extension support as well as social and environmental implications.

5. Vision 2020 & Mission

Vision Statement

“To be a pioneer in aquaculture development & fisheries extension for ensuring food security, livelihood, welfare of fishers and employment generation”

Mission

- ❖ Sustainable development of inland, coastal and marine capture and culture fisheries are promoted so as to attain self sufficiency in fish production for domestic consumption and development of seafood industry.
- ❖ Contribution of the fisheries sector to food, nutritional and livelihood security of the people of the State of Odisha and our nation, is enhanced.
- ❖ A balanced approach to fisheries management based on sound ecological, economic and precautionary principles is promoted to ensure that fish populations remain viable, productive and accessible to future generations.
- ❖ An efficient value-chain and an organized and secure marketing/ supply system/ chain for fish and fishery products is created so as to protect the producers' and consumers' interest and to augment marine products export and foreign exchange earnings to the State of Odisha.
- ❖ Infrastructure facilities for aquaculture clusters and for landing and berthing of fishing crafts are augmented.
- ❖ Public-private partnership and community participation for developing, managing, conserving and sharing the fishery resources, is promoted for the benefit of our society.
- ❖ Human resource base for fisheries management and development is created through capacity building.

6. Policy Objectives/goals

- ❖ Quantitative and qualitative appraisal of the fishery resources and their potential in the State of Odisha.
- ❖ Enhancing the productivity and production of fish from the inland, brackishwater and marine resources and doubling the fish production in the next five years.
- ❖ Tapping the untapped potential of aquaculture to contribute to food and nutritional security.
- ❖ Quality seed production in inland sector.
- ❖ Bridging the gap between the demand and supply of fish for domestic consumption.
- ❖ Harnessing the opportunity of expanding export markets for high-value products.
- ❖ Capacity building, technological intervention, Human Resource Development, Research & Development, Awareness building and Education of fisherfolk and other stakeholders.
- ❖ Upgradation of infrastructure facilities like FH, Fish Landing Centre (FLCs), cold chain, communication, etc.
- ❖ Upgradation of the overall quality of fish with emphasis on hygienic post harvest handling.
- ❖ Encouraging public-private partnership investment across the sector.
- ❖ Generating additional/ supplementary employment opportunities in the rural sector for the fishers, educated unemployed youth and others.
- ❖ Alleviating the incidence of poverty among fishers by offering them alternative/ supplementary employment opportunities, health care, communication and sanitary facilities and quality education to children and youth.
- ❖ To develop Chilika fishery as a fully managed, sustainable fishery with stakeholder participation.
- ❖ Fisheries resource conservation, management and development through reforming and strict enforcement of relevant Acts, Rules and Regulations, leasing policy.
- ❖ Improving fisheries coherence, governance and re-defining resource access for fishers.
- ❖ Setting of fisheries Hub & Awareness centre.
- ❖ PPP mode of operation in fisheries sector wherever possible.

7. Key policy issues/areas

The key areas of this comprehensive fishery policy are based on the national and international commitments and requirements covering the entire gamut of fisheries, harvest and post-harvest infrastructure and market support, socio-economic aspects of fishers and related issues.

7.1 Inland fisheries

7.1.1 Realistic resource assessment

For sustainable management of capture and culture fisheries in the inland water bodies a reliable assessment of inland resources, including the small water bodies, will be undertaken through a detailed survey using Remote Sensing and Geographic Information System (GIS).

7.1.2 Capture fisheries

(i) Appropriate measures for developing, propagating, conserving and protecting riverine and other open water fisheries in general and threatened fish species in particular will be taken up, which will include:

- a. Fishing in the open flowing waters will be rationalized appropriately. Use of destructive types of fishing and obstruction of naturally flowing waters by fixed/ stake nets, which is detrimental for migration and natural propagation of fish, will be prohibited.
- b. Improvement of river fish genetic resources through river ranching.
- c. Restoration of the degraded river systems and initiation of appropriate conservation measures.

(ii) With a view to ensuring the fishers earn sustainable livelihood, it will be the endeavour of the State to promote co-management of the resources by effective involvement of the local community in a cohesive manner.

7.1.3 Culture based fisheries in lakes/reservoirs

- a. Open water bodies such as Minor Irrigation Projects (MIPs), Kata, irrigation tanks, percolation tanks and reservoirs will be brought under the fold of culture based fisheries.
- b. Emphasis will be given for Cage/ Pen culture in reservoirs wherever feasible.
- c. Reservoir fisheries management and development and enforcement of regulation of fishing in reservoirs, will be in line with the provisions contained in the Odisha State Reservoir Fisheries Policy 2012 notified by the Government of Odisha.
- d. Efforts will be made to create live storage of reservoirs by developing tanks in between the areas of Full Reservoir level (FRL) and Dead storage level (DSL) for fish culture.
- e. Special efforts shall be made for clearance of dead tree stumps and other submerged substrates from the reservoir bed.
- f. Preference shall be given to registered Primary Fishermen Cooperative Societies (PFCS) or authorized Self Help Groups (SHGs) or Pani Panchayat of that reservoir for

leasing of the fishing rights of reservoirs at base price. 25% of reservoirs under the control of Fisheries Department including those which are mismanaged by the fisheries cooperatives could be considered for leasing to private entrepreneurs for commercial pisciculture by auctioning.

- g.** Regular stock enhancement programs shall be taken up in selected reservoirs for enhancing the reservoir fish productivity and production. To accomplish this, steps shall be taken to create basic infrastructure facilities in the reservoir sites such as captive hatcheries, nurseries, fry/ advance fingerling raising centres, fish landing and handling sheds, ice plants, etc.
- h.** Government shall take suitable measures to bring the unused/ derelict water bodies like swamps, waterlogged areas, canals, dead rivers etc into the fold of extensive pisciculture to increase fish production in the State.

7.1.4 Aquaculture in tanks and ponds

- a.** Best practices being followed in the country for increasing the fish production, particularly from aquaculture to be adopted wherever suitable, in the State for the purpose of doubling of fish production in the next 5 years.
- b.** Aquaculture shall be developed in a sustainable manner for enhanced production, increased income, employment generation, nutritional and livelihood security.
- c.** Minor Irrigation Projects (MIP) below 40 ha water area/ Gram Panchayat (GP)/ Revenue tanks shall be uniformly leased for a period of not less than five years for pisciculture. Suitable norms for leasing of these water bodies may be prescribed in consultation with the Department of Fisheries.
- d.** Aquaculture production will be promoted through vertical and horizontal expansion by following scientific and eco-friendly methods. Special attention shall be given to small-scale aquaculture by helping them in improving their aquaculture practices through the provision of extension services and capacity building for entrepreneurship development through training.
- e.** For improving and stabilizing farm productivity and income of the rural poor, integrated farming, rice-fish diversified farming, fish culture in watershed ponds or water harvesting structures, and backyard/household ponds, will be promoted.
- f.** Government shall incentivize/ subsidize farmers/ entrepreneurs to develop waterlogged areas/ Tampara (Ganjam district)/ dead rivers of government/ private ownership into fish ponds which are now lying unused and unproductive.
- g.** Recirculatory aquaculture production systems shall be promoted as high intensive farming practices in urban and sub-urban oriented aquaculture for high value fish species.
- h.** Cluster approach (Aquaculture Estates) shall be encouraged which will help in promoting entrepreneurship and in improving the technical design of the farms,

common infrastructure provisions, effective control on pollution hazards, easy and single window clearance for issue of licenses and registration.

- i. Commercial aquaculture will be promoted for attracting entrepreneurs in fishery sector in the State.
- j. Demonstration projects will be taken up to popularize the latest and advanced fish seed production & fish culture technologies among the aquaculturists.
- k. Adoption of good aquaculture practices are recommended for increasing production, productivity, and returns as well as for ensuring sustainability at the production and environmental levels.
- l. Organic farming will be promoted for attracting niche market.
- m. Aqua-clinics/ Aqua-shops/ Aqua-business Centres will be set up at selected locations providing subsidy, which are essential areas of intervention for disease surveillance and supporting promotion of aquaculture and employment generation.
- n. Clusters will be created in Govt/ Pvt. land and leased out on long term to fish farmers for commercial aquaculture.
- o. Convergence of various developmental programs such as ATMA, Watershed Mission, OCTMP, MGNREGS, NMSA, RKVY, RIDF, Externally Aided Projects etc. will be considered for promotion of aquaculture in the State.

7.1.5 Fish Seed Production and Certification

- a. The Government will augment the existing capacity of the fish seed hatcheries to meet the widening gap between the demand and supply of fish fry/ fingerlings. The existing single species fish seed hatcheries in the public sector will be converted into multi-species fish seed hatcheries as a measure of diversifying aquaculture covering a wide range of freshwater fish species.
- b. A need based assessment on the fish/ scampi seed requirement will be made and establishment of fish/ scampi hatcheries both in the public and private sector will be encouraged on an as-is need basis. While doing so, Cluster Approach (CA) on PPP mode will be supported by allocating specific areas for fingerling production with suitable infrastructure, where the private sector, fisheries cooperatives and SHGs could work jointly.
- c. Fish seed certification norms and fish seed hatchery registration based on the Govt. of India's guidelines issued during 2010, shall be formulated and implemented for checking the quality of fish seed produced within the State and those imported from other States. Fish seed producers/ hatchery owners and One-stop Aqua Shops in the state will be duly registered and accredited for ensuring free movement of disease free and quality fish/ scampi brood stock, seed and other inputs and implements within and/ or from outside the state.
- d. Quarantine measures will be introduced wherever necessary and enforced for transboundary import of any seed, feed and ornamental fish species.

7.1.6 Ornamental fish culture

World trade in ornamental fisheries has touched a record figure of over billion dollars and is growing at 10% per year. A large number of ornamental fishes that abound in the freshwaters viz. *Danio rasbora*, *Trichogaster spp*, *Gara spp*, *Botia spp*, *Carasius auratus* etc. are known to exist in Odisha. Recognizing ornamental fisheries as a potential sector under fish farming; freshwater ornamental fish breeding and rearing in backyard hatcheries will be popularized as a cottage industry, among the rural community and SHGs of Odisha as an alternate vocation and commercial breeding and rearing will be given impetus in the private sector. Training will be imparted to the rural community and they will be provided with the requisite support for construction of aquaria and market intervention.

7.2 Sustainable coastal aquaculture

- a.** A realistic assessment of the available potential for brackishwater areas for culture will be made with the help of remote sensing and GIS.
- b.** By suitably restructuring the land lease policies, the government owned brackishwater areas suitable for coastal aquaculture will be allotted to fisheries cooperatives, self help groups, unemployed youth and private entrepreneurs, for a minimum period of 15 years, for promoting *sustainable aquaculture* as spelt out in the guidelines of Coastal Aquaculture Authority (CAA), issued from time to time. Single window system for applying for and approval of lease of Govt. land will be introduced. This will ensure free/ easy flow of institutional credit for coastal aquaculture and related ancillary activities.
- c.** Development of coastal aquaculture clusters with basic infrastructure such as inlet and outlet channels, road connectivity, electricity, ice plants, cold storages, etc., in PPP mode will be encouraged and promoted, where the private entrepreneurs and small-scale aquaculturists can co-exist.
- d.** For promoting polyculture (multispecies culture), conversion of the existing single species shrimp hatcheries to multi-species hatcheries will be given a thrust, besides increasing the capacity of these hatcheries.
- e.** Collection of fish/ shrimp seed and brood stock from the wild will be restricted through appropriate legal/regulatory measures.
- f.** All the farms, hatcheries and other support facilities in the coastal areas shall be compulsorily registered with the competent authority and effort towards adoption of the Code of Best Management Practices for healthy farm and hatchery management practices will be made. Also, adoption of Good Management Practices (GMP) will be popularized among the shrimp farmers, for a higher, more stable and high value production output.
- g.** The Coastal Aquaculture Authority Act and Rules 2005 amended from time to time shall be strictly enforced for regulating coastal aquaculture in the State.

- h.** Regular monitoring of the impact of shrimp culture on the ecology and economy and control of major pathogens in farmed and wild stocks, actual disease outbreak, as well as testing and certification of mother shrimp/ brood stock, hatchery and seed, will be given due consideration.
- i.** Strict regulatory mechanisms to prevent sale and use of detrimental antibiotics and chemicals in coastal aquaculture systems will be introduced.
- j.** Coastal aquaculture will be supported through capacity building, skill development and human resource development and appropriate awareness programs.
- k.** Besides strengthening the existing shrimp hatcheries, establishment of more hatcheries for finfish and vannamei and feed mills will be encouraged.
- l.** Aqua-clinics at district level in the public sector and Aqua-shops in each cluster by the private sector will be set up at select locations on a pilot basis.

7.3 Marine fisheries

Collection of reliable statistics on marine fisheries and related aspects using standardized methodologies will be given due importance with a view to making a reliable assessment of marine fishery resources and the fishery potential. Due attention will be given to the use of information technology, strengthening of database, Human Resource Development, etc.

The guidelines and provisions of the Comprehensive Marine Fisheries Policy (2004) of the Government of India which advocate protection and conservation of the resources, encouragement to subsistence level fishermen and technology transfer to small-scale sector, infrastructure support to industrial sector, ecosystem based fisheries management, etc., will be adopted.

For reducing fishing pressure in the traditional yet sensitive fishing ecosystems, resource specific fishing in the offshore areas will be promoted, by refurbishing the existing trawlers and by designing and introducing new fuel efficient intermediate size fishing crafts.

For protecting the turtle breeding grounds and for safeguarding the interests of fishermen dependent on fishery resources in the protected areas for their subsistence, action will be taken as per the orders of the Central Empowered Committee of Supreme Court and other rules and regulations of the Central and State governments. Steps will be initiated in consultation with the Forests and Wild Life Department to demarcate the turtle nesting grounds.

Steps will be taken for marine resource enhancement, protection and conservation of marine biodiversity through deployment of artificial reefs and sea ranching in select areas along Odisha coast.

There will be a unified system of online registration of all types of fishing crafts operating in Odisha's territorial waters. The fishing crafts registered with Odisha Government will be given special identification marks such as colour codes and/ or other signs for different fishing crafts/gears etc.

Co-management and Community involvement in fisheries management:

Co-management is considered the most suitable approach to manage fisheries given that the fishing community has its own management traditions and institutions. It is a process, whereby, a multi-tiered system has to be evolved through actual practice, given the length of the coastline and the different administrative jurisdictions involved. Existing traditional and self-organized structures at grass roots level need to be leveraged as "building blocks" for this approach.

The Government will create the necessary enabling environment to promote the establishment of fisheries management institutions at local government and community level. This will ensure effective participation of stakeholders in the fisheries sector; allow communities to engage in fisheries management and development activities; ensure provision of appropriate support services to fisheries management institutions at village community levels; and enable training of government officials in the principles, practices and benefits of co-management. Capacity-building and orientation will be addressed at different levels and for different sets of stakeholders. This initiative will be piloted through creation of a village level platform along with other initial modules that will provide learning on structure and functions of co- management.

Deep Sea Fishing

Deep sea fishing will be promoted in stages after establishing appropriate technology and scale of operation, ensuring that the resources are available and it is profitable for the operators, for which necessary capacity building and training will be given to the marine fishermen and support will be provided to the entrepreneurs wherever necessary.

Mariculture as an alternative to Fishing

Alternative or supplementary employment generating opportunities such as mariculture need to be evaluated diligently and a sound management framework should be evolved before being promoted as a solution to the fisheries management problem in Odisha. Introduction of mariculture shall be backed by an implementable policy and legal framework, reliable R&D efforts from National Fisheries Research Institutes in the areas of controlled production of seed, feed and economy of culture operation and marketability of the products.

7.4 Post-harvest Infrastructure support & marketing

Fish Quality and related infrastructure

Development of appropriate fish handling, processing, preservation, transportation, distribution and marketing systems will be encouraged both in the inland and marine capture fisheries and aquaculture. Use of low cost energy sources in fish processing, particularly non-conventional energy sources will be considered and promoted. Plant quality control and hygienic conditions in fish processing establishments will be improved and maintained by enforcing the Code for Good Manufacturing Practices.

Large capacity ice plants, chilled rooms and stand alone cold storages will be established at strategic locations, with uninterrupted power supply. Ice storage boxes at reservoir sites and Fish Landing Centres/ Jetties along the coast will be promoted where there are no Ice plants. In select viable pisciculture clusters, flake/ tubular ice plants of adequate capacity will be promoted for producing quality ice.

Hygienic handling, dry fish processing and production of value added products in the small scale sector by the Women SHGs will be encouraged by improving their skill through training and by providing the requisite market linkages.

Measures appropriate for ensuring the quality, wholesomeness, safety for human consumption and value of harvested fish and fishery products, will be promoted and introduced in a phased manner, based on European Union (EU) standards, Hazard Analysis of Critical Control Points (HACCP) and Total Quality Management (TQM).

Fishery Harbours and Fish Landing Centres

Efforts will be made towards equipping all the fishery harbours and fish landing centres along the Odisha coast and making them fully operational by providing all the basic infrastructure facilities such as road, communication, electricity, cold storage facilities, ice plants and through maintenance dredging for keeping the entrance to harbours/ landing centres free from siltation, which hinders the free passage of fishing crafts and to implement in PPP mode wherever possible

Management of most of the facilities already created calls for improvements in terms of internal resource generation, maintenance and upkeep. These issues will be subjected to a detailed evaluation which will help in upgrading them for meeting international standards such as EU and HACCP. For construction, operation and maintenance of the new fishery harbours and fish landing centres on PPP mode, involvement of private sector/ community including the fisheries cooperatives in particular will be encouraged.

For effective operation and management of the existing fishery harbours and fish landing centres; and designing, construction and management of new fishery harbours and landing centres, a Fishery Harbour Authority will be set up as an autonomous organization

based on the guidelines of the Union Government. A full fledged Engineering Wing for construction & maintenance of fishery harbours and fish landing centres in Odisha will be set up under the Department of Fisheries.

Fish marketing and trade

Measures will be taken to achieve sustainable increase in the value and volume of fish marketed for domestic consumption and export. Appropriate marketing facilities will be made available for wholesale/ retail fish market including creation of modern fish market complex in industrial belt/ cities and towns in association with the municipal/ local organizations.

Efforts will be made to fully comply with national and international requirements in post harvest care of fish catch, fishery products and by-products so as to achieve highest food safety standards for domestic consumption and exports.

Through reduction of post-harvest losses and value addition and augmentation of the requisite infrastructure support, adoption of sustainable brackishwater aquaculture, etc., the contribution of coastal and marine fisheries sector to the overall exports and the foreign exchange earnings can be increased manifold. In this context, private sector involvement in creating the requisite infrastructure for value addition in marine products will be encouraged.

Odisha Pisciculture Development Corporation (OPDC)/ FISHFED will cater to the needs for fish preservation, transportation, distribution & marketing.

7.5 Safety of fishermen at Sea and welfare of fishermen

Efforts will be made to provide the fisher community with the requisite navigational and communication instruments, life saving devices such as life jackets, first aid kit, etc., and early warning about the cyclone, tsunami, storm surge, floods, etc., by establishing institutional linkage with Odisha State Disaster Management Agency (OSDMA), FISHFED and FISHCOPFED and through easily accessible means for ensuring safety of the fishing community both at sea and on land.

The existing welfare schemes for marine fishermen will be extended to inland fishermen as well.

7.6 Livelihoods

It is important to build upon the social strengths and social capital of the fishing community and to set an approach for enhanced fisheries livelihoods within the context of 'sustainable fisheries', focusing on achieving a balance between economic growth, security of fishery resources and equitable development.

Issues on education of fishermen/ women, vocational training on improved fisheries techniques, livelihood enhancement and diversification by creating alternate and supplementary employment opportunities through capacity building and market tie-up and grant of social benefits to fishermen without land holding, will all be given adequate importance.

7.7 Environment and fisheries

The Government will make efforts to

- ❖ ensure that Environmental Impact Assessment (EIA) is carried out and taken into consideration in all large-scale/ commercial fisheries sector projects.
- ❖ control/ ban destructive fishing and processing methods.
- ❖ monitor and review environmental protection measures applied in the fisheries sector.
- ❖ promote protection of the fragile eco-systems, eco-system processes and conservation of biodiversity.
- ❖ protect vulnerable, endangered and threatened aquatic species, habitats and areas of special ecological significance.
- ❖ minimize adverse environmental impacts on fisheries by establishing mechanisms at appropriate levels.
- ❖ set binding minimum standards for protection of the environment from fisheries and aquaculture activities;
- ❖ establish and/ or maintain systems to monitor the quality of aquatic environments that support active fisheries;
- ❖ promote public awareness among all the stakeholders of the need to protect aquatic ecosystems that support fisheries; and
- ❖ promote multi-disciplinary research into adverse environmental impacts on aquatic ecosystems that support fisheries.

A concerted strategic action plan will be evolved and implemented to conserve and protect the rich aquatic biodiversity of the State.

An ecosystem approach to fisheries management which strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries, will be implemented.

7.8 Supplementary nutrition

Little focus is being given presently to introduce the commonly consumed small indigenous fish species, which are rich in micronutrients, vitamin A, calcium, iron and zinc, and animal protein and essential fats in the aquaculture systems. Consumption of these

small fish species will help in improving micronutrient deficiencies in nutrient deficient rural poor, pregnant women, lactating mothers and children in particular,

Small sized seasonal or perennial ponds including backyard ponds and water logged rice fields suitable for culture of small fish species will be encouraged in a systematic manner to meet the local demands. A farmer-friendly policy under the broad name '**social fishery**' will be initiated where farmers will grow these species of small fish along with other traditional carps without substantial investment. This sustainable approach will directly benefit poor farmers in terms of obtaining economic as well as nutritional benefits and indirectly reduce anthropogenic pressure on wild stock of small fish.

To make full use of this potential, appropriate measures to develop and implement sustainable, low-cost culture technologies with required R&D support from National Fisheries Research Institutes and other organizations, shall be introduced.

Knowledge and information about the nutritional value of small fish, and how best to include them in diets provided under the noon mid day meal scheme in schools and health centres shall be disseminated to all the fisheries officials, health care providers, educationists and others.

Awareness will be created among the rural masses on the value of the consumption of micronutrient-rich small fish by pregnant and lactating women and children through electronic and print media.

7.9 Information, Education and Capacity building (IEC) and awareness

Effective systems will be introduced for collection, compilation, analysis, storage, dissemination, updating the data base and maximizing the use of Information and Communication Tools (ICT) for fisheries planning, management, monitoring, governance and evaluation purposes.

Informal and formal literacy programs for fishing communities will be initiated to improve their literacy levels through local organizations and government departments by making use of various support agencies.

Comprehensive training, exposure visits, refresher courses, extension services, advisory and awareness programs will be promoted and implemented so as to build human resource capacity and to increase levels of knowledge, skill and expertise amongst the State fisheries officials, rural masses, fishers and in the public and private sectors, at district and village levels.

7.10 Entrepreneurship development & Self Employment

Government will play a catalytic role in self-employment through developing private entrepreneurship in fisheries, in the areas of fish farming, integration of fish culture with livestock rearing and paddy cultivation, fish seed production, ornamental fish trade, fish processing, production of value added fishery products, fish marketing (wholesale/ retail), fish trading/ vending, transport operations, net mending/ repairs, setting up small-scale industrial units for production of fishing equipment, trading of aquaculture instruments, outboard and inboard motor repairing workshops, etc.

Required support systems will be created to ensure that a sizable number of unemployed youth, women and poorer sections of the society can take up self employment activities in the fisheries and allied sectors for their economic empowerment.

An atmosphere conducive for providing access and/ or control over land and resources, basic infrastructure, finance, support systems such as extension services and specific credit, market support services, skill upgradation including training and education, sharing of capital contribution and promoting linkages for adequate finance, linking fish and fishery products to domestic and export market etc., will be promoted in the State for entrepreneurial development.

7.11 PPP in fisheries

Public-private investment partnerships (PPP) that equitably benefit both fishing communities, including the poorest and most vulnerable members of those communities, as well as the private investors, will be promoted. An enabling environment that promotes the establishment and growth of community based private enterprises in the fisheries sector will be created. Joint partnerships between the entrepreneurs and the small-scale fishers of Odisha in various fisheries/ fishery related activities will be encouraged for harnessing judiciously the inland, brackishwater and marine resources and setting up marine hubs.

7.12 SC/ST in fisheries

Proper forward and backward linkages at various levels between the Fisheries functionaries and the ST/SC community will be established for improving their socio-economic condition and livelihood.

The requisite assistance at micro-level starting from identification of the progressive SHGs among the SC/ST community, registering them under the FFDAs/ BFDAs, providing them training, allotting water areas for farming, arranging financial support for pond

development and inputs to technical and extension support for fish farming and marketing, will be promoted. Skills of tribals in catching fish will be turned to their advantage by filling gaps in terms of providing fishing gears and marketing avenues.

7.13 Fiscal Incentives

Declaration of aquaculture at par with agriculture for enabling easy flow of credit/ institutional finance, lower power tariffs, tax, excise/ customs duty concessions/ waiver/ exemptions and water supply, will be considered in consultation with the authorities concerned. Necessary incentives and tax holidays will be provided to large-scale fish farmers who produce 10 tonnes/ha or more of fish.

To make the fish processing in Odisha more lucrative and competitive in export and domestic markets, the duties, taxes and other levies such as cess on export of fish and fishery products, on packaging material, machinery, etc, will be rationalized in consultation with the authorities concerned.

Adequate and timely credit to investors particularly towards working capital to fish processing sector; increasing the limit on enterprise size to a level which will qualify the fish/ shrimp producers/ processors for priority lending; and provision of working capital for primary fishery cooperative societies for their revival, will be promoted.

In consultation with the Insurance companies and other authorities concerned, the issue of providing insurance cover to fish ponds, along with standing crop, fishing/ aquaculture instruments/ equipment, etc., will be considered. Government will promote insurance in inland aquaculture by providing necessary incentives to attract insurance companies for coverage of fish seed farms and fish culture.

8. Support for implementing the policy

8.1 Planning and Governance

Systematic planning forms the basis for decision making in fisheries management and coordinating these activities with other sectoral planning and policy activities at all levels. Better representation of the collective interests of the fisheries sector shall be established in relation to wider development and planning issues, along with strengthening the capacity of stakeholders and institutions to contribute and take responsibility for fisheries sectoral matters in general.

There will be a coherence between the policies within and outside the fisheries sector, on the basis of a set of principles including: (a) Holistic approach that recognizes the inter-dependence between welfare, development and fisheries management with the allied sectors such as environment and forests, agriculture, rural development, water and land resources, social and women welfare, etc; (b) Ensure that all policies and schemes are

in harmony with fisheries management objectives; and (c) Achieve a balance in funding for management, welfare and development. Towards this end, the institutional capabilities and competencies of officials as well as the fishers will be evaluated, planned and invested in.

While implementing a specific scheme or any intervention to implement the policy, the issue of sustainability and likely ecological / environmental impact would be duly considered.

8.2 Building capacity

Capacity development will be focused at four levels: (i) individual fishers including fish farmers, fisherwomen and other stakeholders, (ii) State Fisheries Department personnel, (iii) NGOs, Fisheries cooperatives and (iv) the unemployed youth and entrepreneurs.

It will be ensured that the Government establishes linkage between the fisheries and other line departments/ organizations and engages them for building capacity/ training in sustainable fisheries development and management. Evaluation of long-term impacts of interventions will be undertaken and used to inform future approaches to fisheries development and management and livelihood enhancement among the fishers.

The capacity building of farmers will be undertaken through progressive farmers as far as possible.

Emphasis will be given for developing scientific literature in Odia language to educate the common public about the importance of fish in health and nutrition. Further, literature on different fisheries and aquaculture technologies will be developed/ translated for wider circulation.

8.3 Fishery Co-operatives

The fishers will be encouraged to be members of the fisheries cooperatives/ Self Help Groups. Steps will be taken to strengthen the human resource base and improve the financial base of the existing Fisheries Co-operative Societies from Primary to apex level and to revive/ revitalise the ailing Marine PFCS/ PMFCS & Fisheries Federation (FISHFED). The activities of the apex cooperative federation will be re-oriented and re-structured.

8.4 Equity and Gender budget

The Government will address issues relating to equity in employment and business opportunities; and ensure equity in the access, tenure, participation and sharing of benefits that accrue in fisheries. The gender concerns will be integrated in fisheries planning, decision making and implementation, to ensure sustainable social and economic development. Training and capacity building of the women fishers and fish farmers will be given adequate importance.

8.5 Investment in fisheries

Implementation of the fisheries sector policy will require significant financial resources. An investment climate and a long term investment programme will be created for the sustainable management of the fisheries sector. Public, private sector and community based investment in the fisheries sector that is environmentally, socially and economically sustainable will be promoted.

8.6 Advisory support services

Fisheries extension service delivery system will be adopted through the existing district, block and GP level by strengthening them to provide information and advice and facilitate extension service for all the fisher and fish farmers.

8.7 Global change

The policy takes into account latest paradigm shift in related Central/ State Government policies as well as the international aspects of fisheries management and market demands (such as World Trade Organization (WTO)/ International Maritime Organization (IMO) regulations, FAO Code of Conduct for Responsible Fisheries, FAO's International Plans of Action for the Management of Fishing Capacity and Illegal, Unreported and Unregulated Fishing. The Odisha Government will consider these aspects and take appropriate action as required for addressing these issues for effective fisheries management and development in Odisha.

8.8 Institutional Arrangements

Productive linkages will be established with all macro-level institutions relevant to the management and development of the fisheries sector and to the socio-economic development of the people who depend on the sector.

8.9 Organisational aspects

A strong technical team; a core management team; and a monitoring, surveillance and control team will be built within the Fisheries Department to plan, implement and manage fisheries programs. The Department of Fisheries shall have a mandatory role in approvals of urban and industrial development that have an effect on fisheries and/or fishers' livelihoods.

Fisheries Department will be strengthened with requisite technical and engineering personnel for smooth and successful implementation of fisheries programs and activities. Statistical wing in fisheries will be strengthened by developing proper data collection system/ market study mechanisms to provide proper information and data bank for future planning.

Government Fisheries Training Centre will be created and upgraded into a multi-disciplinary Centre of Excellence. More Training Institutes will be set up for imparting short term and long term training to fish farmers and fisheries officials. Refresher training for the officers in different nodal institutions will be made mandatory and linked to career advancement.

State Level/ District level laboratories will be set up for soil and water analysis. Services of fishery consultants and experts will be availed whenever required for testing and infusing new technologies.

8.10 Legal framework

Comprehensive legislation encompassing integrated coastal management, fisheries conservation and fisheries management, which is essential will be evolved and put in place.

The provisions of OMFRA shall be strictly enforced and a stringent fishery management system put in place. The restriction of fishing effort in the territorial waters of Odisha will be in the form of restriction in the number of vessels, number of days or hours at sea, engine power, size of the fishing gear and mesh size, prolonged seasonal closure to allow recovery of over-fished species, preventing fishing of juveniles and spawners during breeding/ spawning season and reduction in fishing pressure on over-exploited fishery resources, for which appropriate enforcement measures/ mechanisms will be introduced in the OMFRA. Introduction of any fishing boat to the fleet size will be monitored/ permitted/ disallowed as per the existing OMFRA. The reduction or expansion of fleet size in trawling will be decided by the Government in consultation with stakeholders and experts from time to time.

A sound Monitoring, Control and Surveillance system (MCS) including the Vessel Monitoring System (VMS) on the lines of international instruments, will be implemented to check violation of the provisions of OMFRA and intrusion of fishing vessels of the neighboring states/ countries into coastal and territorial waters of Odisha.

Odisha Inland Fisheries Act will be framed on the lines of the Model Inland Fisheries & Aquaculture Act of the Ministry of Agriculture and that of other relevant States and notified, and the Rules there-under framed and implemented.

As and when the need arises, the Land Revenue Acts, will suitably be amended to facilitate grant of long-term lease of these water bodies, etc.

8.11 Fisheries Reform

In the context of increased threats and pressures from unsustainable fishing practices, climate change and the impact of other competing developments, leading to a

rapid decline in the benefits generated by the sector, efforts will be made to reform the fisheries sector in Odisha. The overall goal of reforms will be to ensure that the fisheries sector makes a positive net contribution to sustainable development in Odisha.

Fisheries reform will focus on a move towards a more democratic and participatory management system based on a co-management approach. The programme will establish and operationalise appropriate frameworks, processes and capacities in the public and private sectors, and civil society, which will facilitate the planning, design and implementation of appropriate fisheries development and management strategies and plans – the basis of a new governance framework. This will ensure the recovery and future resilience of the sector and achievement of its full potential as a source of livelihoods for the fishers.

8.12 Monitoring and evaluation

The progress of implementing the Fisheries Policy requires an effective monitoring and evaluation mechanism with appropriate and efficient feed back mechanism. Regular monitoring and assessment will be accomplished by setting up a Policy Advisory Unit in the Department of Fisheries to provide systematic inputs for refining the policy depending on the future needs, its implementation and management, to handle inter-sectoral issues and to protect the interests of fisheries and fishing communities.

8.13 Policy Review

Policy will be reviewed both by internal & external agencies every five years to continue to align with successive Five Year Plans, national priorities and global issues, impact of climate change, fisheries governance, etc.

Strategy, Action Plan & Deliverables

9. Strategy, Action Plan & Deliverables

9.1 Inland fisheries

a. Capture Fisheries

Strategy:

The strategy for capture fisheries management in the riverine systems will be at two levels: i) management of the river basin as a whole, and ii) the fishery management. Some of the major tasks that will be addressed are: control of erosion and land run off; maintenance of natural river habitat, adequate water flow, and water quality; artificial structures for habitat improvement; provision of facilities for the fishery; etc.

Action Plan & deliverables:

- ❖ *Conservation and management of commercially important fish species through regulation of fishing (including gear control, banning certain types of gears, mesh regulation), ranching and habitat restoration in the rivers and canals.*
- ❖ *Setting aside of reserved areas or the protection of habitats such as spawning grounds which is crucial to the survival of certain species.*
- ❖ *Introduction of regulations governing seasons of fishing in traditional fishing communities, restrictions on fishing effort through engaging fishermen in alternate employment and income generating activities, etc.*
- ❖ *Promoting aquaculture in riverine systems (particularly in the flood plains, drainable ponds), rice-fish culture, cage culture, etc.*

Schemes/Programmes & Incentives:

- ❖ *Resource mapping & GIS database along with MIS will be developed for planning & monitoring plans & programs in fishery sector.*
- ❖ *New scheme on promotion of aquaculture estate in waterlogged areas/ dead rivers/ Tampara will be introduced to encourage fisheries Sector.*
- ❖ *Ongoing schemes like net & boat assistance for inland fishermen will be continued.*
- ❖ *New scheme on river/ open water bodies ranching will be introduced.*

b. Culture based fisheries in lakes/reservoirs

Strategy:

Taking into consideration the existing species spectrum and production potential in relation to water spread area, different management and operational strategies shall be adopted for management of fisheries in reservoirs. These measures shall encompass strategies for post-impoundment (in the case of new reservoirs), conservation measures such as declaration of sanctuaries/ protected areas, closed season for fishing, preventing/ banning

the use of destructive types of fishing methods and gear, mesh size regulation and their strict enforcement.

While fish raised in small reservoirs will be basically *an extension of fish farming system* established in pond culture, the management strategy for fisheries in large reservoirs will have the twin objectives of development and conservation. A package approach comprising stocking, monitoring, equitable and just royalty arrangements, market intervention through cooperatives/ corporations and quick transport/ distribution channels, etc, will be evolved.

Action Plan & deliverables:

The micro-plan developed for fisheries management and development in all the 138 reservoirs above 40 ha water spread area will be implemented, through which the average fish production could be raised from the present 93 kg/ha to a minimum of 200 kg/ha with a total production basket of over 40,000 tonnes of fish valued over `200 crore by 2020.

- ❖ 2700 Women SHG will be benefitted from development of fisheries in swamps and low lying areas.
- ❖ Development of fisheries in reservoirs will provide full-time employment to 15500 members in 102 co-operatives and part-time employment to equal number of their family members in fisheries ancillary activities.
- ❖ 10000 fishermen in reservoirs will avail boats and nets to improve their livelihood through fishing in the reservoirs.
- ❖ About 1500 members of reservoir fishery cooperatives/ SHGs will get employment in 100 captive nurseries/ cage/ pen proposed for fish/ fingerling production.

Schemes/ Programmes & Incentives:

- ❖ *Reservoir Fisheries Development will be continued through stocking of adequate quantity of fingerlings.*
- ❖ *Demonstration for Cage/ Pen culture in Reservoirs/ Rivers/ Canals etc will be continued for increasing productivity in open water resources.*

c. Aquaculture in tanks and ponds:

Strategy:

The strategy for aquaculture would include (i) scientific stocking, (ii) horizontal (i.e., bringing un-utilised cultivable area under scientific extensive/ semi-intensive farming) and vertical expansion (i.e., improving the production of the existing extensive and semi-intensive area), (iii) integrated farming, (iv) contract farming, (v) species diversification, (vi) development of basic infrastructure facilities in aquaculture clusters, (vii) empowerment of

farmers and fisherwomen, and (viii) increase in productivity and doubling aquaculture production.

In the next decade, the entire existing potential freshwater aquaculture resources would be brought under extensive and semi-intensive fish farming in a phased manner with an average production level of 3.5-4 tonnes/ha/annum.

Action Plan & deliverables:

- Additionally 15,000 ha tank/ pond area will be developed for freshwater aquaculture in 30 districts by 2020. This will create additional direct employment to approximately 60,000 persons in farming; and indirect employment to 1,20,000 in ancillary activities.
- Additional area of 1500 ha from the existing ponds under the purview of GP and Revenue Department shall be brought under scientific culture, every year by leasing in for five years and with other suitable interventions.
- Fish productivity will be enhanced ideally from 2.13 tonnes/ha to 3.5 tonnes/ha from extensive farming practices and from 2.60 tonnes/ha to 5 tonnes/ha in semi-intensive systems and 10 tonnes per ha in intensive systems.
- Total inland fish production of the State will register an increase from present level of 2.63 lakh tonnes to about 5.30 lakh tonnes in the next six years.

Schemes/ Programmes & Incentives:

- ❖ *The ongoing schemes for promotion of intensive aquaculture with top up subsidy will be continued, augmented and strengthened.*
- ❖ *Interest subvention on short term and long term Loan in fisheries sector will be continued.*
- ❖ *Subsidy on establishment of Commercial Agri-enterprises in fisheries sector and incentive for fisheries equipment/ implements viz. aerator, net, ice box, water analysis kit, oxygen equipment, transportation vehicle and mini fish feed mill etc. will be continued under the State Agriculture Policy 2013.*
- ❖ *Suitable new scheme/ projects will be introduced for popularization of intensive aquaculture through demonstration for transfer of new technology.*
- ❖ *New scheme on incentivizing use of pellet fish feed will be promoted for increasing the productivity.*
- ❖ *A State-of-the-art Fishery Training Centre will be established.*

9.2 Fish Seed Production and Certification

Strategy:

Greater emphasis shall be given for allocation of specific areas for fingerlings production, mostly in the private sector, fisheries cooperatives and SHGs. The technology of multiple breeding of carps and air breathing fishes shall enable intended hatcheries to extrapolate their seed production season and enhance the seed production capacity. Creation of brood bank will play an important role in producing and supplying the genetically healthy stock to all the hatcheries in order to avoid the problem of inbreeding depression.

Action Plan & deliverables:

20 no hatcheries will be set up with a planned capacity for producing 30 crore fish seed and 3 feed mills will be promoted for producing 30,000 tonnes of feed per year through PPP/ Pvt sector. This will help in enhancing the fish production to meet the requirement of the State and provide direct employment to 210 persons in hatcheries and 100 in feed mills and indirect employment to approximately 500 in fish seed production.

Schemes/ Programmes & Incentives:

- ❖ *The ongoing schemes for promotion of fish seed hatchery with top up subsidy will be continued, augmented and strengthened.*
- ❖ *Incentivizing fingerling production will be promoted in private sector under Commercial Agri-Enterprise category of the State Agriculture Policy 2013.*
- ❖ *Suitable scheme/ projects will be introduced for augmentation of small indigenous fish production for fulfilling nutritional requirement. Species diversification will be promoted for increasing productivity.*
- ❖ *30 nos of aquatic health management laboratories shall be set up at State/zone/district level to facilitate scientific aquaculture.*

9.3 Sustainable coastal aquaculture

Strategy:

In brackish water areas the farmers will be organized under cluster approach and wherever possible necessary support infrastructure and technical know-how will be provided to promote shrimp and fish culture in a big way.

Action Plan & deliverables:

Technology demonstration projects for a spectrum of fish species will be taken up. To meet the seed requirements of these species, one of the shrimp hatcheries under the Government sector will be upgraded/ converted into a multi-species hatchery, with support from MPEDA/ CIBA.

It is envisaged that in the next five years (by the year 2020), an additional area of about 4000 ha will be developed and brought under shrimp farming, taking the total area under culture to 20000 ha. This will augment the total shrimp production by an additional 16,000 tonnes at a conservative estimate of an average of 4 tonnes per ha. in two crops.

The total shrimp seed required for bringing 20000 ha brackishwater area, will be 275 crore, as against the present level of 33.50 crore pl-20 from 14 hatcheries in the state. While a part of the additional seed requirement will be met from the existing hatcheries by making them fully operational, the remaining part of the seed will be procured from other neighboring shrimp seed producing States.

- It is envisaged that these activities will generate direct employment for 7150 persons in farming and 150 in hatcheries and indirect employment in ancillary activities.

Schemes/ Programmes & Incentives:

- ❖ *Approach road/ dedicated power feeder to the fishery clusters will be provided to facilitate fish production & export.*
- ❖ *Suitable scheme/ projects for setting up 15 no's shrimp & 50 no's of fish hatcheries will be promoted with 25% incentive to meet the seed demand.*
- ❖ *Suitable scheme/ projects for setting up 50 no's of fish hatcheries will be promoted with 25% incentive on species diversification for increasing productivity and sustainability.*
- ❖ *Suitable scheme/ projects for vannamei culture will be promoted with 25% incentive for increasing shrimp production & export.*
- ❖ *Subsidy on establishment of Commercial Agri-enterprises in fisheries sector and incentive for fisheries equipments/ implements viz. aerator, net, ice box, water analysis kit, oxygen equipment, transportation vehicle and mini fish feed mill etc. will be continued under the State Agriculture Policy 2013.*

9.4 Marine fisheries

Strategy:

Reliable stock estimates, assessment of the efficacy of the existing fishing regulations, present economic status of fishing operations, formulation of key management interventions, and above all, allocation of adequate funds are a few major issues that demand immediate attention to ensure sustainability of marine fisheries. Therefore, the fishery resources potential of Odisha coast, will be re-assessed for evolving an implementable strategy for judicious exploitation of the coastal and marine fishery resources.

Considering the fact that the fishing effort extended at present in the shelf waters (up to 100 m) is near optimal in most areas, further sustainable development of the marine fishery in the Odisha coast is feasible only through:

- ❖ Diversification of the fishery to deeper and distant waters for deep sea lobsters, shrimps, squid, cuttle-fish and oceanic tuna resources.
- ❖ Exploitation of non-conventional fishery resources such as small-pelagics.
- ❖ Enhancement of marine fisheries resources through Artificial Reefs and sea ranching in particular, in the context of depleting resources and for protection and conservation of rare, vulnerable, threatened and endangered species.

Fisheries cannot be managed effectively without the cooperation of fishermen. The delegation of fisheries management to the local fishing committees will be more effective than the direct management by the Government. Co-management and participatory approach make maximum use of indigenous knowledge and expertise to provide information on the resource base and to complement scientific information for management.

The precautionary approach will be used where there are potential threats of serious or irreversible damage to ecologically fragile critical coastal systems and to living aquatic organisms.

Action Plan & deliverables:

Since the coastal fishery resources depend heavily on the coastal zone ecosystem, their protection is of paramount importance, through involvement of local communities. Appropriate integrated coastal zone management and development of the coastal and marine ecosystem in a holistic manner will be given adequate priority. These are critical for the sustainable management of fisheries and fishers' livelihood, particularly the traditional fishers and other stakeholders.

- ❖ 50 intermediate crafts will be promoted for introduction in the private sector for Fishing in the deep area providing employment to 500 fishers.
- ❖ 5000 traditional fishermen will be covered under motorization programme by supplying 4000 Out Board Engines (OBM) and 1000 In-Board motors (IBM) to improve their income and social status.
- ❖ 20 Artificial reefs will be deployed in the territorial waters of Odisha for resource conservation and resource enhancement.
- ❖ 5000 insulated ice boxes will be provided to traditional fishermen and the co-operatives.
- ❖ 10000 fishermen families living in the area where fishing ban is in force, will get direct employment through Alternative livelihood activities.

Schemes/ Programmes & Incentives:

- ❖ *Ongoing schemes for motorization of traditional craft with subsidy assistance for marine fishermen will be continued, augmented and strengthened.*
- ❖ *Suitable scheme/ projects with 25% incentive will be introduced for harnessing deep sea fishery resources by assisting entrepreneur for intermediary crafts, Tuna liner etc.*

- ❖ *Ongoing scheme for modernization/ up gradation and shore based infrastructure development of 50 no of fishing harbour/ jetty/ FLC will be continued, augmented and strengthened.*

9.5 Post-harvest Infrastructure support & marketing

Strategy:

The existing fishery harbours at Paradip, Dhamra and Naugar would be able to accommodate about 700 mechanized vessels. The fishery harbour sanctioned for establishment at Bahabalpur would accommodate about 300 mechanized fishing vessels and the fishery harbours at Chandipur and Chaudamani when developed would accommodate about 1500 mechanized vessels. Therefore, there is a need for planning fishery harbour facilities to around 200-250 more fishing vessels. The motorized fishing vessels would need another 15-20 fish landing centres with shore-based facilities for about 1500-2000 boats to beach land since the FLC facilities created for motorized boats are insufficient. For identifying the locations for establishing these additional facilities, the coastal areas will be mapped using Remote Sensing (RS) and Geographic Information System (GIS).

To minimize exploitation by middlemen and ensure good returns to fishers and fish farmers, marketing of fish will be arranged by identified organizations (Fishermen Co-operative Societies/ FISHFED/ MPEDA/ FISHCOPFED/ GFCCA, etc.) through buy-back agreements for captured and farm produced fish and fishery products. Model/modern wholesale and retail fish markets and cold chain at identified sites will be promoted for retailing of fish to eliminate intermediaries and provide large choice of hygienic food fish to consumers and expand processed fish food market. This will also ensure adequate returns to the farmers, price stability in the domestic market and availability of fish to the consumers at affordable price.

The capacity and utility of the existing minor fishery harbours and fish landing centres need to be improved, which are almost non-functional because of heavy siltation by undertaking periodic dredging operations.

Reducing post-harvest losses by strengthening the post-harvest infrastructure, value addition, product diversification and enhanced thrust on hygiene will be among the strategies. This will enable remunerative price to farmers and the enhanced shelf life will lead to reduction in wastages. Research institutes/ private institutions in the state will be encouraged for taking up R&D on developing/ upgrading technology for production of value added products using locally available raw materials, for meeting the export demands.

The Government together with fish worker organizations and the Seafood Exporters Association will develop suitable criteria and mechanisms to ensure that trade barriers do not impair the livelihood of fishers. Compliance with international requirement in post-harvest care of catch therefore, will be ensured. The Government will try to promote infrastructure

for cold chain, value addition and preservation at farm level with facilities of weighing, sorting, grading, packing, pre cooling, cold storage, Individual Quick Freezing (IQF), blast/plate freezing and refrigerated van etc. through PPP / Private sector. Further, renewable energy based pilot cold chain projects shall be promoted wherever feasible.

Action Plan & deliverables:

Efforts will be made towards doubling the level of processing of marine products and increasing the value addition by two times the current levels by the year 2020. Export market potential for processed fish in terms of value will be increased from the present level of about Rs.1800 crore in 2013-14 to Rs.5000.00 crore by 2019-2020 and Rs.8000.00 crore by 2020-2025. Beyond 2025, the value of marine products exported to be sustained at the 2025 levels. The source of funds for achieving this goal will be a combination of investments by the industry players, debt/ equity from financial institutions, foreign direct investment and Government funding.

Schemes/ Programmes & Incentives:

- ❖ *Suitable scheme/ projects will be introduced for post harvest management & value addition of fishery products in 30 nos of places in 5 years.*
- ❖ *Approach road of 100km to fishery clusters will be provided to facilitate fish production & export in 5 years.*
- ❖ *Dedicated power feeder to 2000 no fishery clusters will be provided to facilitate fish production & export with 25% incentive in 5 years .*

9.6 Safety of fishermen at Sea and welfare of fishermen

Strategy:

A sizable population of the fisherfolk living in the 641 marine fishing villages of Odisha are socio-economically backward and also victims of cyclone and other natural calamities. Most of the fishermen settlements totally lack the basic amenities such as roads and telecommunication, housing, electricity, drinking water, education, health clinics, sanitation – public toilets, waste water disposal, etc. State Government will make efforts to address these basic needs and amenities.

Action Plan & deliverables:

Improving the socio-economic status of fishermen and providing high levels of sea safety to the fishermen, therefore, are the twin strategies for ensuring welfare of fishers. Major fishermen welfare programs to be implemented are saving-cum-relief scheme, development of model fishermen villages, Group Accident Insurance Scheme, and improving the safety at sea.

Schemes/ Programmes & Incentives:

- ❖ *Supply of special PDS rice will be continued for marine fishermen (APL) dwelling in the Olive Ridley conservation area as a welfare measure.*
- ❖ *Ongoing schemes “Saving-cum-Relief/ Group Insurance Scheme“ for fishermen will be continued.*
- ❖ *Ongoing schemes like “Development of Model Fishermen Village and Matsyajibi Basagraha Yojana” will be continued for the homeless fishermen .*
- ❖ *Ongoing schemes like “Award to meritorious children, Revolving fund for SHGs, Safety Fishermen at Sea and Marketing infrastructure support for fishermen,” will be continued.*
- ❖ *Incentive shall be given for insurance coverage of fish crop/ fish farm.*

9.7 Capacity Building and other Support for implementing the policy

Strategy:

For systematic planning and implementation of different programs, the following issues need to be addressed. The capacity building of all stakeholders in fisheries development of the State would be taken in to consideration.

Action Plan & deliverables:

- ❖ *Strengthening of Fishery Co-operatives.*
- ❖ *Equity and Gender based budgeting.*
- ❖ *Engagement of consultants for advisory support services.*
- ❖ *Strengthening institutional arrangements.*

Schemes/ Programmes & Incentives:

- ❖ *Ongoing schemes like “Reactivation of co-operative society” will be continued.*
- ❖ *Ongoing schemes like “Empowering fishermen through mobile advisory services & call centre and Infrastructure support for modern & hygienic fish market” will be continued.*
- ❖ *Construction/ modernization of office building of 50 nos fishery offices with office automation will be taken up in next 5 years.*
- ❖ *Capacity building of 2500 fishers/ 1000 technical personnel will be taken up through adequate training and exposure visit to successful sites within & outside the country in next 5 years.*
- ❖ *New scheme will be introduced for providing managerial grant to OPDC/ FISHFED for fisheries development in the State.*
- ❖ *Training and exposure visit for the Fishers and Extension personnel will be taken up for acquiring new technologies and similar activities in other areas.*
- ❖ *Consultants for different activities will be engaged for providing expertise, technology, capacity building and preparation of DPRs etc.*

- ❖ *E-Governance for software development, equipment, training, wage support shall be provided for better monitoring of schemes.*
- ❖ *314 no of Training & Awareness centres with office of AFOs existing in block level will be utilized for strengthening grass root level extension.*

9.8 End Note

This policy document highlights the need for an integrated multi-disciplinary approach for achieving sustainability in the fisheries sector of Odisha. Implementation of this policy requires inter and intra-departmental coordination and cooperation which is central to the growth of fisheries sector. It is designed with conviction that this policy will strengthen the implementation of the identified strategies and initiatives for developing and managing the fishery resources of Odisha sustainably and for securing the food, nutritional and livelihood security of the people of Odisha.

Physical Action Plan on Fisheries development basing on Odisha Fisheries Policy for 2015-16 to 2019-20							
Sl.	Name of scheme/ Programme	Annual target	Target for 5 years	Annual Scheme-wise target			Remark
				State Plan(SP)	Centrally Sponsored Scheme (CSP)	NFDB/ RKVY/ RIDF/ Others	
1	2	3	4	5	6	7	8
A	Inland fisheries						
a	Inland Capture Fisheries						
1	Resource mapping and GIS data base for fishery(New) 2 years	15 dist	30 dist	15 dist			
2	Development of Waterlogged Areas	10.00 Ha	50.00 Ha		10ha		
3	Aquaculture estate in waterlogged area/ dead rivers/ Tampara, subsidy 50% - Rs.3.50 lakh/ ha	200 Ha	1000 Ha			200Ha	
4	Integrated Development of Inland Capture Resources	6 units	30 units		6 units		
5	Net & Boat assistance for inland fishermen for 3 years (RKVY)	2000 nos.	6000 nos.			2000 nos.	
b	Culture based Fisheries in Lakes/ Reservoir						
6	Enhancing Reservoir fish production	8.0 crore fingerling	40.0 crore fingerling			8.0 crore fingerling	
7	Demonstration of cage/ pen culture / Captive nurseries/ hatcheries/ boat/ net/ exposure visits	20 units	100 units			20 units	
c	Aquaculture in tanks/ ponds						
8	New water Area development for aquaculture , subsidy 50% - Rs.3.50 lakh/ ha (New)	1000 Ha	5000Ha	1000Ha			
9	Development of Freshwater Aquaculture through FFDA	2000 Ha	10000 Ha		2000ha		
10	Demonstration of intensive aquaculture (RKVY) for 2 years	300ha	600ha			300ha	
B	Seed production & certification						
11	Establishment of hatchery for fish seed production	20 hatcheries	100 hatcheries			20.00	
12	Upgradation of Govt. fish farms and hatcheries for quality seed production(New)	20 hatcheries	100 hatcheries			20.00	
13	Matsya Credit Card in MGNREGS tank for 3 years (RKVY)	200 nos	1000 nos			200 nos	
14	Incentive for use of pellet fish feed for 2 years (RKVY)	928 no	1856			928 no	
15	Subsidy on production of fingerling for 2 years (RKVY)	6 Crore fingerling stocking	12 Crore fingerling stocking				
16	Fish / Shrimp feed mill establishment. Incentive 20 %	3 units	15 units			3 units	
17	Testing laboratories (State / Zone/ Dist) in 2 years	15 units	30 units			15 units	

C	Brackishwater area development						
18	Development of Brackishwater Aquaculture through FFDA	800 Ha	4000 Ha		800ha		
19	Hatchery devt. for marine/ brackish water fish/ shrimp Incentive 25 %	3 no	15 no			3 no	
20	Promotion of Vannamei seed supply to farmer with 25% incentive	200Ha	1000Ha	200ha			
21	Promotion of Aquaculture and Shrimp Export cell	1	1	1			
22	Innovative projects (Sea bass, crab, milk fish, mullet, fish filleting, and other value addition etc) Subsidy 50 %	10 no	50 no			10 no	
23	Incentives for fisheries equipments/ implements under State Agril Policy(New)	1000 units	5000 units	1000 units			
D	Marine Fisheries development						
24	Incentives for deep sea fishing through intermediary craft and training	10 units	50 units	10 units			
25	Motorisation of Traditional craft	1000 nos.	5000 nos.		1000 nos.		
26	Alternative livelihood support for Inland fishermen	1000 nos.	5000 nos.	1001 nos.			
E	Marketing Infrastructure Support						
27	Modern hygenic fish markets (Wholesale) Incentive 40 %	1 nos.	5 nos.			1 nos.	
28	Infrastructure support for fish market in urban areas Incentive 40 %	6 units	30 units			6 units	
F	Post-harvest Infrastructure support & marketing						
29	Assistance to the Fishermen for livelihood Support for Marine/Chilika	2000 nos.	10000nos			2000 nos	
30	Up gradation Modernization of fishing harbour & FLC	5 no	25no			5	
31	Infrastructure development of Fishing Harbour/ fishery jetty/ FLC (Net mending yard, godown, ice plant, cold storage, processing centre, water electricity facility) Incentive 25 %	5no	25no			5	
32	Infrastructure support for post harvest & value addition	6no	30no	3		3	
33	Cold chain (ice plant /cold storage/ pre-processing plant/ refrigerated van under Agriculture policy-2013) Incentive 20 %	15 units	75 units			15 units	
34	Approach road to fishery clusters/ hatcheries etc	20km	100km			20km	

35	Assistance for power supply to private aquaculture units/ hatcheries Incentive 25 %	400 nos.	2000 nos.			400 nos.	
G	Capacity Building & other support for implementation of policy						
36	Organisation of Skill Upgradation Training & Awareness Meet	700	3500	700			
37	Fisheries Training and Extension (CSP 20:80)	500	2500		500		
38	E-governance (software development, equipment, training and wage support) 2 year	25 office	50 offices	25 office			
39	Capacity building of Departmental officer and fish farmers through training and exposure visits including abroad trainings etc. (New)	500 farmer and 200 Officer	2500farmer and 1000 officer	500 farmer and 200 officer			
40	Infrastructure Development for creation of Office Building & staff quarter	20 no	100 no	20 no			
41	Office of AFO cum Training & Fishery Awareness Centre at Block level (Total 314 units)	63 units	314 no	63 units			
42	Establishment of State of Art fishery training center in 2 years	1 no	1 no	1 no		2 no	
H	Safety of fishermen & Welfare of fishermen						
43	Matsyajibi Unnayan Yojana	3500 scholarship 200 SHG	17500 scholarship 1000 SHG	3500 scholarship 200 SHG			
44	Mobile advisory services & call centre on fishery	100000 SIM	500000 SIM	100000 SIM			
45	Matsyajibi Basagruha Yojana	1000 nos.	5000 nos.	1000 nos.			
46	Special PDS rice in Olive Ridley areas	10000 family	50000 family	10000 family			
47	Saving cum relief	10000 family	50000 family		10000 family		
48	Group Accident Insurance scheme (CSP 50:50)	11 lakhs	11 lakhs		11 lakhs		
49	Development of model fishermen village (low cost house)	1000 nos.	5000 nos.		1000 nos.		
50	Safety of fishermen at sea	1000 nos.	5000 nos.		1000 nos.		
51	Assistance for reactivation of Co-op Societies	30 PFCS	150 PFCS	30			
52	Incentive for crop/ fish farm insurance	1000ha	5000ha	1000ha			