

Aquaculture Policy

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Aquaculture is fast expanding industry which is expected to play an important role in meeting the demand of fish. With the dramatic growth of aquaculture in recent years, the planning of its development has become increasingly important. Proper planning will stimulate and guide the evolution of the sector by providing incentives and safeguards, attracting investment and boosting development. Also, proper planning will aid in ensuring the long-term economic, environmental and social sustainability of the sector, and help in to economic growth and poverty alleviation.

Aquaculture governance

Good governance is fundamental for successful aquaculture development policies to be formulated and implemented. Good governance, based on sound and enforceable legal and institutional framework is fundamental to create an enabling environment to attract investment in aquaculture expansion.

Growing concerns on the aquaculture sector are prompting it to improve its governance which translate directly into high production outputs. Achieving good governance in aquaculture is as important an objective as aquaculture development as it will ensure sustainable aquaculture development ecologically, economically and institutionally. Good governance in aquaculture will benefit the sector in the short and long terms as it is becoming increasingly recognized that problems and failures in aquaculture development are no longer solely related to technological issues

The main features of good governance are: participation, consensus orientation, strategic vision, responsiveness, effectiveness and efficiency, accountability, transparency, equity and the rule of law. It includes legally binding rules, such as national legislation or international treaties. Efforts are becoming visible at national levels to consider the development of the sector in a holistic manner through ecosystem approaches, to formulate national policies and implementation strategies focused on the sustainable development of the sector, to establish or revise legal frameworks and regulations, to recognize the importance of stakeholders outside aquaculture in policy and participatory decision-making, to establish producers' organizations and responsive institutions to deal with aquaculture, and to promote internationally-endorsed codes of conduct in farming practices.

Adequate planning and policy-making are the key means by which governance can be improved. Good planning for aquaculture development, encompassing the formulation of policies and decisions over their means of implementation, contributes to the good governance of the sector and, thus, to its sustainable development.

Aquaculture policies and the means to implement them are the outcome of planning processes, which is commonly referred to as “policy-making”. Planning is a logical and rational process that involves formulating policies, strategies and plans. Policy includes the broad vision for the sector, reflecting its directions, priorities and development goals at various levels including regional, national, and international. Strategy is the roadmap for the implementation of a policy and contains specific objectives, targets and instruments to address issues that affects the sector and obstruct its development. Plan is a set of guidelines for the implementation of a strategy, to achieve its objectives and implement strategy instruments. It is time-bound and contains specific programmes and activities and details the resources required to achieve them.

Because of their practical nature, strategies and plans can be linked together in a single document. Policies, however, are sometimes presented as stand-alone documents, later complemented by a strategy and plan.

A statement of policy goals occupies the top position in the hierarchy of planning. These are usually broad and qualitative goals, such as achieving poverty alleviation, creation of employment or sustainable development. Policies should also specify roles of the public sector, the private sector and the civil society in aquaculture development. Below the policy come the strategies. These provide a set of practical objectives to meet the policy goals. These objectives can be either qualitative or quantitative or both. It is normal for each policy goal to be supported by a number of different strategies. Agreed plans which focuses on the steps that might be taken to implement the policy forms the third stage in the hierarchy. Plans contain the instruments and activities that will support the achievement of each strategy objective and lead to the overall implementation of the policy through the achievement of the policy goals.

Based on these considerations, policies should be formulated first, strategies second and plans third.

Aquaculture policies must reflect the thrust of relevant national, regional and international goals and agreements guiding development as a whole. Aquaculture policy formulation will not take place in isolation but within the context of other commitments, which policy-makers should be aware of. This will enable the outcome of aquaculture planning to be consistent with, and relevant to, broader policy agendas related to poverty alleviation, gender equity, world trade, environmental protection, climate change adaptation and overall economic growth.

National Mariculture Policy

Mariculture plays an important role in providing high- protein foods, increasing coastal residents’ incomes, and promoting regional economic development. The development of mariculture requires the support of government through policies and schemes. Mariculture policies refer to a series of policies related to mariculture laws and regulations, national ocean strategies, departmental instructions, and industry standards, covering many aspects like

mariculture, sea use, marine environment, and marine resources. These policies should lead to widespread adoption of mariculture technologies to meet the additional seafood demand by facilitating responsible development, co-ordination and management of mariculture production in the country while ensuring environmental sustainability and socio-economic upliftment of stakeholders.

The Vision of mariculture policy for increasing farmed seafood production in the country is ‘A sustainable and responsible mariculture sector that contributes to the food and nutritional security of the country and enhances the quality of life of the stakeholders’ and its mission is improve ‘widespread adoption of mariculture technologies to meet the additional seafood demand by facilitating responsible development, co-ordination and management of mariculture production in the country while ensuring environmental sustainability and socio-economic upliftment of stakeholders’.

Mariculture is a specialized branch of aquaculture involving the cultivation of economically important marine plants and animals in the sea or any other natural water bodies having tidal influence and includes onshore facilities like brood banks, hatcheries, nursery rearing and grow-out systems using seawater.

Status and Opportunities of Mariculture in India

Globally, aquaculture has emerged as the fastest growing food production sector with an annual growth rate of >6% in the last two decades. In India, inland aquaculture has emerged as a fast-growing sector and it has shown steady growth over the years and has become a viable alternative to declining capture fisheries. Mariculture is the fastest growing subsector of aquaculture and has very high growth potential. In 2020, mariculture contributed around 30% of the 112 million tonnes of production, both capture and culture, from marine waters. Aquaculture production from marine waters contributes 33.6 million tonnes which formed about 38.1% of the global aquaculture production.

It is evident that mariculture presents a great opportunity for increasing seafood production in the face of growing demand for marine protein and limited scope for expanding wild fishery harvests. The projected annual mariculture production potential based on area available in the Indian region is 4 to 8 million tonnes, whereas the current estimated mariculture production is less than 0.01 million tonne per year. The success in the development of inland and brackishwater aquaculture in India also corroborates with the prospects of the emergence of a mariculture production sector.

Mariculture activities in India were initiated through the research and development activities of the Central Salt and Marine Chemical Research Institute (CSIR-CSMCRI) during the 1970s with culture of seaweed, *Gracilaria edulis* in Krusadi Island, Tamil Nadu. This was followed by the Central Marine Fisheries Research Institute (ICAR-CMFRI) in the early 1980s through small scale commercial culture of bivalves. Additionally, in the 1990s, Central Institute of Brackishwater Aquaculture (ICAR-CIBA), National Institute of Ocean Technology (NIOT) and the Marine Products Export Development Authority (MPEDA) also contributed significantly to the development of mariculture. Open sea mariculture was

initiated for the first time in India by ICAR-CMFRI in 2005 by establishing the first open sea floating cage in Visakhapatnam with funding support from the Department of Animal Husbandry, Dairying and Fisheries (DADF), Ministry of Agriculture, Government of India. Further refining of technologies and their adoption has led to rapid spread of cage mariculture along both the coasts in near shore waters by self-help groups, fisher societies and small-scale entrepreneurs. Technologies available in India include seed production and farming of fin fishes such as cobia, pompano, sea bass, groupers, snappers, breams and ornamental fishes, shell fishes such as mussels, oysters, clams, Indian white shrimp, green tiger shrimp, blue swimmer crab, pearl oyster, seaweed and ornamental shrimps.

The main Objectives of the national mariculture policy

- To enhance mariculture production in the country and increase income, employment and entrepreneurship opportunities in a sustainable and responsible manner.
- To promote cooperative partnership in mariculture by encouraging the infrastructural, technical and other inputs.
- To adopt an environmentally sustainable approach for development of mariculture.
- To provide an enabling environment for sustainable development of mariculture in India by providing the required policy and legal framework and support to entrepreneurs.

Priorities and development goals

Mariculture Area Development

Suitable potential mariculture sites will be demarcated for different mariculture activities. In mariculture zones where there is potential for large number of small-scale mariculture units or in technology parks, onshore support infrastructure needs to be developed and necessary logistical support for breeding, nursery rearing, feed storage, fish processing and domestic/international trade needs to be provided.

Leasing and Licensing

The fisheries departments of the coastal states will lease out / license the waters for mariculture as per guidelines formulated by the Union Government under this Policy for small and large scale mariculture enterprises.

Mariculture Systems and Species

Major focus will be given for the improvement of existing technologies to be on par with international standards, bio-security and code of practices. New aquaculture systems will be promoted in identified areas after their farm level validation. All native food and non-food marine species having mariculture potential will be promoted.

Precautionary Approach to Environmental Sustainability

Incorporating the principles of ecosystem approach in mariculture will promote a process of enhanced sectoral management at different scales, taking into account environmental limits and the interests of other users and stakeholders.

Seed and Feed

Ensuring the availability of seed material for the targeted mariculture species is critical to sustain the momentum of proposed expansion of mariculture sector in the country. State-run finfish/shellfish hatcheries, nursery units, seed banks, and specific pathogen free (SPF)/specific pathogen resistant (SPR)/genetically improved brood banks will be established.

Quality of the finished feed and traceability of the feed stuffs used will be ensured so that eco-labelling of suitable mariculture production systems will be promoted to ensure premium prices for such produce.

Food Safety and Health Management

Traceability and record-keeping of farming activities and inputs which impact food safety will be ensured by documenting the source of inputs such as feed, seed, permitted veterinary drugs, vaccines and antibiotics, additives and chemicals.

Mariculture operations will implement aquatic animal health management programmes set up in compliance with relevant national legislation and regulations, taking into account the FAO-CCRF Technical Guidelines on Health Management for Responsible Movement of Live Aquatic Animals and relevant standards of the World Organization for Animal Health (OIE).

Capacity Building and Extension

The Government will strive to enhance the skills and capabilities of the traditional fishers and other potential stakeholders to undertake mariculture and popularize the vocation in India. This will enable interested fishers to move from fishing to the more economic and efficient mariculture activities. In order to provide thrust and impetus to new candidate species/technologies /areas for mariculture, frontline participatory demonstrations and technology transfer will be taken up with support and hand holding.

Insurance and Support Services

Mariculture activities are susceptible to the risks of natural calamities and anthropogenic activities. Suitable insurance schemes need to be introduced to plug this gap and will encourage private insurance companies to develop insurance solutions for the sector. In view of the long gestation period and high investments required for cultured marine pearls, adequate support will be extended to entrepreneurs.

Processing, Value Addition and Market Support

Value addition and efficient market logistics will be promoted to minimize post-harvest losses and in preserving the nutritional value of fish. Awareness on nutritional value of fish will be generated through public campaigns.

Institutional Mechanisms

Various agencies involved in the development of mariculture in the country will work closely among themselves and with the private sector, fishermen co-operatives and self-help groups (SHGs) in a synchronized manner to promote mariculture

Legal Framework

Mariculture in India shall be promoted in consonance with the relevant national and global instruments and other guidelines.

Research and Development (R&D)

Mariculture is an emerging sector and in order to realize the vast potential of mariculture, significant impetus will be provided for R&D activities.

To ensure the growth envisioned in NMP, an implementation plan and guidelines will be developed along with the time lines to address the emerging issues. It is hoped that this Policy will also be able to tap major opportunities that are expected to emerge from the Blue Economy initiative of the country

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