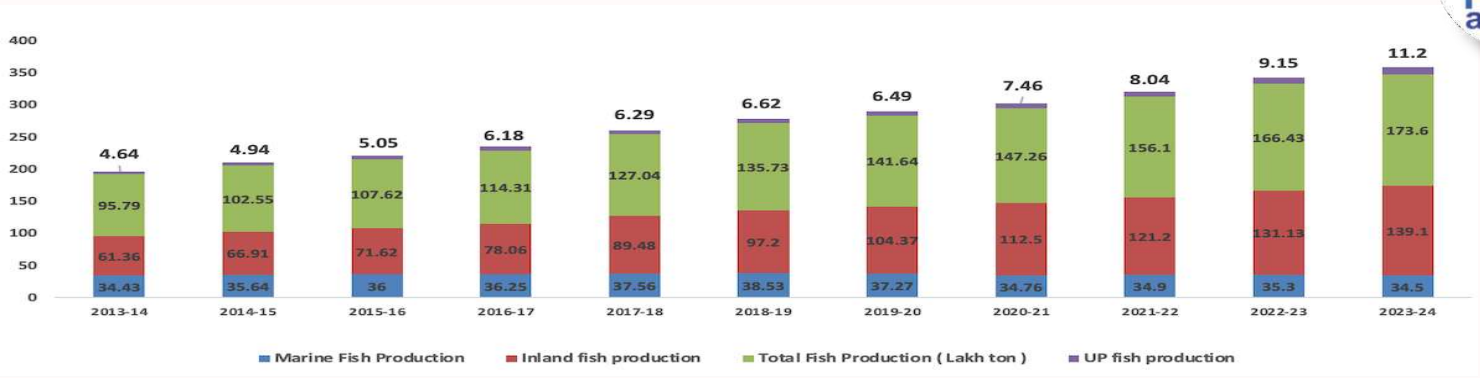
Vikshit Bharat, Vision 2047
Enhancing Fish Production

PVRAQUA Culture Private Limited
Rajnish kumar – Director
GB Member- NFDB
Progressive Fish Farming Entrepreneur.
District- Ghaziabad
9910515234

Fish Farming: A Global Perspective



Fish farming, also known as aquaculture, has become a vital component of the global food system. It provides a sustainable source of protein and contributes to food security worldwide.

India is one of the largest fish producing countries in the world and shares 7.58% to the global production. Contributing 1.24% to India's Gross Value Added (GVA) and 7.28% (2021-22) to the agricultural GVA, fisheries and aquaculture continue to be an important source of food, nutrition, income and livelihood to millions of people.

Fisheries sector in India has shown impressive growth with an average annual growth rate of 10.88% during the year from YOY.

Fisheries and aquaculture remain an important source of food, nutrition, employment and income for millions, especially the rural populations. In fact, the sector provides livelihood to about 50 million fishers and fish farmers at the primary level and twice the number along the value chain.

" (PMMSY) – A scheme to bring about Blue Revolution through sustainable and responsible development of fisheries sector in India" with an estimated investment of Rs. 20050 crores comprising of (i) Central share of Rs. 9407 crores, (ii) State share of Rs 4880 crores and (iii) Beneficiaries contribution of Rs. 5763 crores for its implementation for a period of 5 years from FY 2020-21 to FY 2024-25

The Country is bestowed with varied and huge potential resources in the form:-

•Rivers and Canals (1.95 lakh km),

•Floodplain Lakes (7.98 lakh hectare)

•Ponds and Tanks (24.33 lakh hectare)

•Reservoirs (31.50 lakh hectare) and brackish water (14.10 lakh hectare)

• In addition, the marine fisheries activities spread along the country ’s long coastline of 8118 km with an EEZ of 2.02 million square km.

•0.75 million Tonnes in 1950-51 to 12.61 million Tonnes during 2017-18 Production, and target is 22 MMT by 2024-2025.

•India contributes 75% production from Inland / fresh water & 25% from Marine fishery with 8-10% average annually growth.

•In South Asia / Africa tentative 400 million people diet protein more than 50% comes from Fish only .

•Market Place created, 1k CR Industry as of now out of which 60k CR export shrimps .

•As per Food Agriculture Organization dip by 13% in Marine fishery globally and shifted to Inland /Fresh water fishery and short fall of 50-80 MT by 2030 in Sea food.

•PVRAQUA Starts Fish Farming training center to provide Education / Support for up lift ment of farmers in livelihood as well as double the Income and consultancy & contract farming for beginners and entrepreneurs.

•We are providing end to end solutions in Aquaculture Industry from seed stocking to harvesting in simple language Fish culture one roof solution.

Pre & Post picture of Masuri Jheel , GZB(50 Acre),kudus to PVRAQUA Team.

Agriculture Allied Sector: Opportunities and Challenges

Increased Demand

The rising global population drives the demand for fish, leading to increased opportunities in aquaculture. **8MMT deficit in country**

Sustainable Practices

Fish farming provides a sustainable source of protein and reduces pressure on wild fish populations.

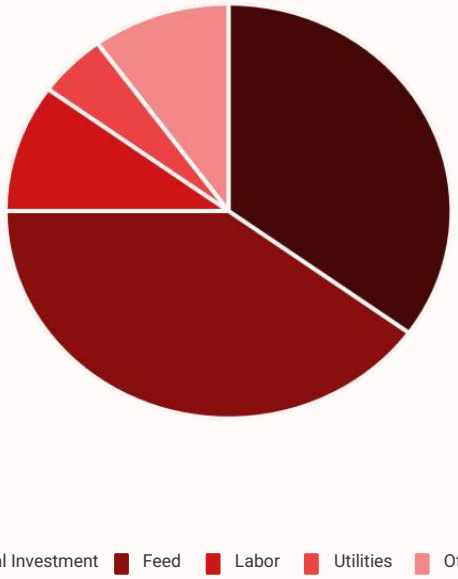
Job Creation

The aquaculture sector creates employment opportunities in rural areas, contributing to economic growth. Target **to provide employment 50M**

Profitability

Fish farming can be a profitable venture with good management and access to markets.

(A) Capital and Operational Ratio in Fish Farming



- Fish farming operations require significant capital investment upfront.
- The initial investment covers pond construction, equipment, and fingerlings.
- Feed constitutes the largest operational cost, accounting for about 65% of total expenses.

(B) Demand and Consumption Trends: Driving the Industry

Global fish consumption is on the rise, fueled by growing populations and increasing demand for protein. The global per capita consumption of fish is estimated to be around 20 kg per year, with Asia being the largest consumer market.

India's fish consumption is also increasing, with the per capita consumption reaching approximately 12 kg per year. This growth is driven by factors such as rising incomes, urbanization, and increased awareness of the health benefits of fish.

20kg

Global Fish Consumption

Per capita

12kg

India Fish Consumption

Per capita

(C)Fish Farming as a Cash-Rich Opportunity

1

1. High Profit Margins

Fish farming can yield significant returns on investment, especially with efficient management practices and optimal production conditions.

2

2. Growing Demand

The global demand for fish is increasing due to population growth and rising protein consumption, creating a lucrative market for fish farmers.

3

3. Diverse Revenue Streams

Fish farms can generate income through various avenues, including the sale of live fish, processed products, and byproducts.

4

4. Government Support

Many governments provide incentives and subsidies to promote fish farming, encouraging entrepreneurs to enter the industry.

(1) Fish Life Cycle

The life cycle of a fish, especially in aquaculture or natural environments, involves several key stages from egg to maturity. The process is generally broken down into the following stages: egg, spawn, fry, fingerling, yearling, and grow-out. Here's a detailed overview of each stage:

1. Egg Stage:

Fertilization: The life cycle begins when fish eggs are fertilized by sperm (in some species, this occurs externally, while in others, internally).

Incubation: After fertilization, the eggs develop in water. The time taken for hatching depends on species and environmental conditions such as temperature and oxygen levels. Proper care is needed during this stage in fish farms to ensure optimal conditions.

Hatching: Once development reaches a critical stage, the eggs hatch into larvae (spawn), marking the end of the egg phase.

2. Spawn (Larval) Stage:

Yolk-Sac Absorption: After hatching, the fish are referred to as larvae (or spawn). They are usually very small and still rely on the yolk sac, which is attached to their body, for nutrition.

Free-Swimming: As the yolk sac is absorbed, the larvae become free-swimming and must begin feeding externally to survive. They are often planktonic at this stage and drift in the water column.

Vulnerability: This is one of the most vulnerable stages of the fish life cycle, where many die due to predation, lack of food, or poor environmental conditions.

3. Fry Stage:

Growth and Feeding: Once the larvae start feeding on small food particles (such as zooplankton or specially formulated feed in aquaculture), they enter the fry stage. At this point, they resemble miniature adult fish but are still very small and underdeveloped.

Independence: Fry are more independent and are actively growing in size. They begin to develop more recognizable fins, scales, and body shapes.

Transition to Fingerling: As they grow, fry undergo physical and physiological changes, preparing them for the next stage, where they become more robust and capable of handling larger environments.

4. Fingerling Stage:

Size and Definition: Fingerlings are young fish that have grown larger (typically about 1 to 3 inches, or 2.5 to 7.5 cm in length). This stage occurs once the fry reach a more substantial size and can be identified as miniature versions of the adult species.

Increased Feeding Capacity: At this point, fingerlings can consume larger food particles, and their digestive systems are more developed, allowing for rapid growth.

Stocking in Ponds or Tanks: In aquaculture, fingerlings are often transferred to larger grow-out tanks or ponds at this stage to continue their growth in more controlled environments.

5. Yearling Stage:

Growth Continuation: After approximately one year of growth, the fish are referred to as yearlings. They are larger than fingerlings but still not fully mature. In natural environments, they are typically more self-sufficient and can avoid predators more easily due to their larger size.

Preparation for Maturity: During this stage, the fish's growth continues, and they begin to approach sexual maturity, although they are not yet fully developed for reproduction.

6. **Grow-Out Stage:**

Final Growth Phase: The grow-out phase is the final stage before the fish reach full maturity and are ready for harvesting (in aquaculture) or reproduction (in the wild). In aquaculture, this phase focuses on achieving the optimal market size.

Reaching Market Size: Depending on the species, the grow-out stage can last several months to years. During this time, the fish are typically fed carefully formulated diets to ensure maximum growth efficiency and health.

Reproduction (in Natural Settings): In the wild, once fish reach maturity, they enter the reproductive phase, starting the life cycle again by spawning and producing eggs.

Fingerling Production and Management

Hatchery Operations

1

Hatcheries play a crucial role in supplying healthy fingerlings to farmers. They utilize controlled environments with optimal water quality and feed to ensure high survival rates.

Fingerling Selection

2

Proper selection of fingerlings is vital for successful fish farming. Farmers must choose healthy, vigorous, and disease-free fingerlings that are of the right size and species for their pond environment.

Stocking Density

3

Stocking density is a key factor in managing fish growth and preventing overcrowding. The optimal density depends on the fish species, pond size, and water quality.

Feeding and Nutrition

4

Providing a balanced and nutritious diet is essential for fingerling growth and development. Farmers must select appropriate feed formulations and ensure consistent feeding schedules.

Monitoring and Management

5

Regular monitoring of fingerling health and growth is crucial. Farmers must track water quality parameters, observe fish behavior, and implement disease prevention measures.

(2)Water Resources: The Lifeblood of Fish Farming

Water Quality

Water quality is crucial for fish health and growth. Parameters like pH, dissolved oxygen, and ammonia levels must be within optimal ranges.

Water Quantity

The amount of water needed for fish farming depends on the species, stocking density, and climate. Efficient water management is key to sustainability.

Water Sources

Fish farming can utilize various water sources like rivers, lakes, groundwater, and treated wastewater, each with advantages and disadvantages.

Water Conservation

Sustainable fish farming requires water conservation through practices like recirculating aquaculture systems and efficient irrigation techniques.




Water Parameters	S.no	Reason	Findings	Solution
Dissolved Oxygen	1	Aeration Failure	High Mortality	Repair & replacement
	2	High Stocking	No Swimming	Add aeration & water exchange frequently
	3	Bloom crash and Organic Load	Poor digestion & Growth	Soil Probiotics
	4	Variation in depth in water body	Eventually death	Fast oxygen release use medicine
	5	High water temperature	Brown Gills	water exchange
Ammonia	1	Excess Feed waste	Mortality	reduce feed
	2	Decomposition of Organic matter	lethargy	bottam sludge removal
	3	Low DO , high Ph , High temp	poorgrowth and red colur swimming legs	Aeration to pond
	4	High Stocking	Abnormalities	zeolite and yucca fresh
PH	1	Due to Rain water	no feeding	add lime
	2	diurnal flicks	influcence the toxicity of Ammonia	reduce the Ph use Alum aluminium suphate
	3	Increase in carbon dioxide	More stress	aply oxygen tablets
	4	No stable Bloom	slow growth and prone to diseases	fermentation regularly
Nitrite toxicity	1	Excess feed waste	Increase organic load	aeration to pond
	2	decomposition of Organic matter	Mortality	priobiotics
	3	Low DO	reddish due to stress	water exchange
Nitrate toxicity	1	Low DO	reduce oxygen trasporting capacity of blood	aeration to pond
	2	decomposition of Organic matter	damage gills	priobiotics
	3	Excess Feed waste	blackening of gills	water exchange
salinity	1	mansoon season 0-5 ppt low	minerals diffecency	minerals & vitamins addition
	2	mansoon season > 35ppt	Stop feeding , poor growth	water exchange
hardness	1	high salinity high hardness	survival problem	water softner
	2	seasonal fluctuations	affects survival rate	lime and zeolite
Alkalinity	1	low during rainy	survival problem	high alkalinity ,gypsum calcium sulphate
	2	low salinity affects alkalinity	seed survival	alum

(3) Feed Availability and Formulation




Feed Availability

Ensuring consistent access to high-quality fish feed is crucial for optimal growth and profitability. **Feed manufacturers play a vital role in supplying the right blend of nutrients to meet the specific needs of different fish species.**

Feed Formulation

Formulating effective fish feed involves a meticulous process of **balancing protein, carbohydrates, fats, vitamins, and minerals.** The formula is tailored to the specific growth stage, species, and environmental conditions of the fish.

1. **Fish Feed (Floating & Sinking) is Playing Vital role in farming , around 65% feed cost in Operational cost in Aquaculture .**
2. **In India hardly 20% is feed based culture , so for Fish Production enhancement and Increment in Utilization of water bodies Feed is mandate.**
3. **Feed Formulation and Feed Manufacturing both are sides of Single Coin .**
4. **Procurement of feed follows 5'R principle (Right Quality , Right Source , Right Quantity , Right Price and Right Time & Place)**

Feeding Regimes and Nutrition Management

1 1. Balanced Diets

Fish require a balanced diet for optimal growth and health. Formulate feed mixtures tailored to the specific needs of each fish species.

2 2. Feed Frequency

Feed frequency varies based on fish size, water temperature, and growth stage. Adjust feeding schedules to ensure adequate nutrient intake without overfeeding.

3 3. Feed Quality

Choose high-quality feed with appropriate protein levels and essential nutrients. Avoid substandard feed that can lead to health issues and slow growth.

4 4. Monitoring Intake

Monitor feed consumption to ensure fish are getting enough to eat. Adjust feeding rates based on individual fish growth and observed behavior.

Formulating Fish Feed Based on Species Requirements

1

Nutritional Analysis

Determine specific nutrient requirements for each fish species, considering factors like growth stage, life cycle, and environmental conditions.

2

Raw Material Selection

Choose high-quality raw materials that meet the nutritional needs of the target fish species, ensuring optimal digestibility and bioavailability of nutrients.

3

Ingredient Optimization

Balance the blend of ingredients to achieve the desired nutrient profile, considering the cost-effectiveness and availability of raw materials.

4

Feed Formulation

Develop specific feed formulations for different species, incorporating appropriate ratios of protein, carbohydrates, fats, vitamins, and minerals.

5

Quality Control

Implement rigorous quality control measures throughout the production process to ensure consistency and meet regulatory standards.

Sourcing Raw Materials for Fish Feed

Plant-Based Ingredients

Sourcing plant-based ingredients, such as grains, legumes, and oilseeds, is essential. These provide essential nutrients for fish growth, such as carbohydrates, proteins, and vitamins.

1. **Soybean meal**
2. **Corn**
3. **Wheat**
4. **Rice bran**

Animal-Based Ingredients

Animal-based ingredients, like fish meal and poultry by-products, are rich in protein and other nutrients. Sourcing these materials responsibly and sustainably is crucial.

1. **Fish meal**
2. **Poultry meal**
3. **Meat and bone meal**

Other Ingredients

In addition to the main ingredients, various supplementary components, like vitamins, minerals, and enzymes, are incorporated into fish feed.

1. **Vitamin premixes**
2. **Mineral premixes**
3. **Phytase**

Quality Assurance

Strict quality control measures are essential during the sourcing process. Testing for contaminants and ensuring compliance with safety standards is critical.

(4) Pond Design and Construction

1

Site Selection

Choose a location with suitable soil, water availability, and access to infrastructure.

2

Pond Design

Consider size, shape, depth, and water inflow and outflow. Select the appropriate type of pond for the chosen species.

3

Excavation and Construction

Excavate the pond area, ensuring proper slope and drainage. Use suitable materials for lining and construction.

4

Infrastructure Development

Install water supply systems, aeration equipment, and other necessary infrastructure to ensure optimal pond conditions.

Technological Advancements in Fish Farming

1

1. Precision Aquaculture

Sensors and data analytics are revolutionizing fish farming. These tools optimize water quality, feeding, and disease control, resulting in improved efficiency and productivity.

2

2. Recirculating Aquaculture Systems (RAS)

RAS technology minimizes water usage and waste generation by recycling and filtering water. This approach reduces environmental impact while providing controlled conditions for fish growth.

3

3. Automation and Robotics

Automated feeding systems, robotic cleaning tools, and AI-powered monitoring enhance efficiency, reduce labor costs, and improve the overall management of fish farms.

4

4. Gene Editing and Selective Breeding

Genetic advancements are creating disease-resistant, faster-growing fish varieties, ultimately increasing yields and ensuring sustainability in the aquaculture industry.





Fish Farming Technology

S.no	Technology	Description	Capital requirement per ton Production	Min. Setup for Project	Fish Type	Type of Farming	stocking Density
1	**Cage culture**	huge water body required like reserviour & Dams with min 30-40 feet with flowing water	35000 / ton	24 cages in count with 96M3 capacity	Pangasius & Tilapia	Intesive	40Kg / M3
2	**Bio floc**	circular / rectangular tanks with water exhange & Aeration	2 lac / ton	min 2 tank to n number of tank	Singhi, Koi , Pangasius & seed rearing for all catfish	intesive	20-25 kg / M3
3	**Recirculation Aqua Culture**	circular tanks with Mechanical & Bio filter, electricity needed for 24 hours & Aeration	7.5 lac / ton (180M3 for 9 ton production via Bio fishency)	80M3 to 180M3 or extend as per Project requirement	Catfish -singhi & Desi Mangur	intesive	60-70 kg/ M3
4	**Pond Farming**	Land digging with water arangement & depth > 6 feet	60000/ ton	0.5 acre to n number of acre	IMC , Craps and Catfish	Intesive / extensive	5 Kg/ M3
5	**In pond Raceway System**	Design some tubes within land for high density & rest part for low density fish & Aeration	130000 / ton (70 ton production against 90 lac setup cost)	1 hectare	catfish , IMC & Craps	Intensive / extensive	5-10 kg/ M3

(5)Disease Prevention and Control Strategies

Early Detection

Regularly monitor fish for signs of illness and promptly isolate any sick individuals.

Biosecurity Measures

Implement strict biosecurity protocols to prevent the introduction of pathogens and control the spread of disease.

Water Quality Management

Maintain optimal water quality parameters, including temperature, pH, and dissolved oxygen levels, to minimize stress and enhance fish health.

Treatment and Management

Use appropriate treatments to address specific diseases, including antibiotics, antiparasitics, and probiotics.

s.no	Name of Medicine	Company name	Type	Diseases/ Symptoms	Dosage	Benefits
1	MYCASOL	GOLDEN STREAK	Antibiotic-enrofloxocin	white spot ,Tail & Fin rot ,red diseases, muscle nucrosis , dropsy, pop eye .	20 ml/ 100 kg of Biomass	no need of binder , useful for prolonged preventive use .
2	GOLDIPRIM	GOLDEN STREAK	Antibiotic-sulphamethoxazole & trimethoprim	bacterial infection- oxytetracyclin -	20 gm / 100 kg of Biomass	dropsy & Trimethoprim eliminates bacteria that cause urinary tract infections. It is used in combination with other drugs to treat certain types of pneumonia. It also is used to treat traveler's diarrhea.
3	Ectocare	GOLDEN STREAK	Antibiotic-Ivermactin with minerals	mucas (cottan type stuff) on fish body ,lice attack , Lernea, Argulus	250 gm / 1000 kg of biomass	Argulas, endo & ecto parasitic control and high bio avaialbility
4	FUNGNIL	GOLDEN STREAK	Formalin & Melachite green	Fungal & protozoal Infection,	1-2 litre / Acre	Fungal attack , Special result observed during whether change and pangasius stocking in winter
5	BLOOMCURE	GOLDEN STREAK	copper sulphate & malachite green in stable form	high dense green water , greenish bloom , algae growth , eutrophication	as per algae type , mention on product	effective control on free floating algae, control of oxygen balance , limiting bacterial, fungal & parasitic episodes
6	ZEO GOLD	GOLDEN STREAK	zeolite with oxygen builder	colur change of water , stinky	10-20kg / acre / month	maintian the water quality in all aspects
7	BKC	GOLDEN STREAK	benzalkonium chloride	Fungicide destroy pathogenic & non pathogenic , red gill broken & tail rot	1 ltr / acre	less mortality ,per month use one litre per acre for catfish culture
8	Gut Pro B	TATA rallis	Probiotic	bacillus strain	10-20 gm / kg of feed	healthy gut , control pathogenic bacteria in gut , Improves FCR , digestive process Improves & proper assimilation of feed
9	Ralli bond	TATA rallis	growth promoter and binder	stimulates the secretion of digestive enzyes	20-30 ml / kg feed	improves digestion, absorption and metabolism of nutrients in feed , protects against water and feed borne toxins.
10	Yeast	TATA rallis	microbial formulation of bacillus& saccharomyces	digestion improvement required	10 gm / kg feed	balanced growth rate of fish, reduce water exchange
11	Growth Booster	TATA rallis	minerals , vitamins and probiotics	less feed intake , less growth and provide for stunted fingerling to yearling	5 gm /kg feed	improves digestability and appetite
12	Sludge Buster	TATA rallis	probiotics and PSB	unwanted gases formation and mortality, sludge available , black soil at bottam	5 kg / acre	improves pond bottam environment
13	OXYGEN	Biomed / Golden	tablets	DO need to increase	2-4 tablet / M3	enhanced dissolved oxygen level
14	Cyro PSB	Biomed	probiotics PSB	Sludge , H2S & Harmful gases control	500 gm / hectare	where Ammonia is very high (community pond) , Improves Pond Environement & Fish Feel stress free for better growth
15	Zeolites	Biomed	Granules	ammonia control	20 kg / acre	for ammonia control and water parameters upto mark .
16	BKD	Biomed	sanitizer	fungal and bacterial infection control	1 litre / acre	anti fungal and anti bacterial kills pathogens available in water
17	Kiba -BSF1	Kiba	Probiotic	Fermentation	5 gm / acre	to improve planktons growth (phyto and zoo) , as well as main water parameters
18	Pond Shiled	kiba	Probiotic	water & Soil paramter improvement	4 gm /acre	to maintain water and soil parameters
19	AQUAAMUNE	INTERFACE PHARMA	feed Suppliment	Ammino Acids & vitamins	2 gm / kg feed	control in virus infection , strong immune and better survival and growth of seed (use in rearing units)
20	CIFAX	AGGARWAL TRADING	sanitizer / disinfactat	water paramter improvement solution	1000 ml / acre	ensure fish health / growth and water parameters

s.no	Name of Medicine	Company name	Type	Diseases/ Symptoms	Dosage	Benefits
21	YUCCA FRESH	HIMALAYA	pure extract of yucca schidigera	natural ammonia binder	1kg / acre	binds ammonia and forms an irrersible nitrogen complex, improves dissolved oxygen level, stress reduction.
22	VITAMIC C	HIMALAYA	immunomodulator	antistress and antioxidant	1-2gm / kg feed	controls stress due to chemical, biological a nd physical stressors, promote tissue repair, shell formation and wound healing
23	LIV-52	HIMALAYA	growth promoter and binder	stimulates the secretion of digestive enzyes	10ml / kg	improves digestion, absorption and metabolism of nutrients in feed , protects against water and feed borne toxins.
24	GASORID	NEOSPARK	solution	ammonia minimization	5-10 gm / kg feed	prevents mortality , poor feed conversion & increase susceptibility to disease due to ammonia in pond
25	TRIAZON	TECH TEAM	solution	H2O2 base fluid	200 ml / acre	oxidizer , ionizer . Ozonizer , ammonia control
26	CLINAR	virbac	cypermathrin	lice / argulas	200 ml / acre	specially in carps (IMC & EMC)
27	Zyvanta aqua	Kemin	Multi Enzymes	digestion Problem	5-10gm / kg feed	improves digestion , utilization of protein
28	Butox	MSD animal health	Deltamethrin	For prevention and control of ectoparasitic infestations	100- 200 ml / acre	Lices / Argulas for Indian major crap
29	Albandazole	Mankind	oral suspension	dis orientation of fish seed	5-10ml / kg biomass	seed at initial level move very fast in water body like going to die , it works as miracle .
30	Salt - NACL	Raw salt	Solid granules and powder	disinfectant	20-25kg / acre	low salinity good for fish growth and chloride protect fish from brown colur disease after covering fish gills as globin.
31	Alum	Fitkari	powder or granules	high alkalinity	as per requirement or current PPT of alkalinity	mortality drastically improved
32	Molasses	Jaggery	viscus liquid or solid	C:N ratio menatin	as per requirement	use in fermantion of water body to enhance the quality
33	Molapure	Tech TeaM	Spray dried Molasses	carbon source	10-20gm /kg feed	energy & palatability in animal nutrition, no fermantation required
34	Kmno4	local procurement- aqua grade	Granules	disinfectant	250 gm / acre	disinfectant pond environemnt , oxygen release and use perdically in 15-20 days at your farm.
35	Lime - agriculture (caco3)	local procurement	powder / rocky	water disinfectant , calcium addition	20-25 kg / acre ,	for planktongrowth and improved water environement for fish farming and use periodically
36	Endectin	xcellor	powder	ivermectin salt	10-20 gm / 100 kg feed	argulas , larnea and dactylogyrus, to support internal healing
37	Aqua care Blance Mineral	Skretting India	coarse powder minerla	Calcium magnesium mineral maintainnce	5kg per acre in the water	Mineral enrichment, Plankton growth , control mineral defieciency
38	AQ care 3D	Skretting India	Powder form of sanitizer	Disinfectant	1kg per Hectare	controls gill infections , Bacterial, fungal and parasitic diseases
39	Santron	Skretting India	Powder	Gut helath enhancer	5gm per kg feed	controls gut infections and improves Nutrient absorbtions
40	Relax	Skretting India	Powder	Stress ciontroller	5gm per kg feed	Controls abiotic stress to aquatic species improves growth and immuno stimulant
41	Eliminator	Keeton & Skretting India	Blue colour tablet form of Probiotic	Probiotic controls sludge and ammonia and toxic gases formation	500gm per acre pond water	sludge degradation, Ammonia and Nitrate control and improves plankton growth
42	Aqua care Probiotic	Keeton & Skretting India	Probiotic in water soluble pouches	Controls over blooming, Bacterial loads , improves beneficial bacteria in ponds	500gm per acre pond water	Improves pond color, Reduce Vibrio growth improves water quality ,

(7)Harvesting and Post-Harvest Handling

1	Harvesting Methods Nets, traps, and manual methods
2	Sorting and Grading Size, weight, and quality
3	Cleaning and Processing Removal of scales and viscera
4	Preservation and Storage Freezing, chilling, and smoking

The harvesting process requires careful planning and execution to ensure minimal stress on the fish. Proper sorting and grading are crucial for optimizing market value. Post-harvest handling involves a series of steps to preserve freshness and quality, maximizing product shelf life and consumer satisfaction.

Processing and Value-Addition Opportunities

Fish Processing

Fish processing involves cleaning, filleting, and freezing. It extends the shelf life of fish and enables transportation to distant markets.

Value-Added Products

Processed fish can be made into fish oil capsules, fishmeal, and fish sauce. These products cater to different market segments and increase profitability.

Packaging & Branding

Packaging plays a crucial role in attracting consumers. Innovative packaging and branding can differentiate products and command premium prices.

Marketing Strategies

Effective marketing strategies are essential for reaching the target audience. This can involve digital marketing, partnerships, and trade shows.

Live fish Vending Vehicle/ Refrigerated

1. The main purpose is to develop a mobile fish vending unit which can be used for transportation, storage and delivery of live, raw, semi processed and processed fish to the customers.
2. Adapt the stocking rate of the fish in the storage facility according to the conditions: water temperature, dissolved oxygen availability, water exchange rate, length of storage and kind of fish. Under the best conditions of cool, well-oxygenated water and short storage time, you may store:

- up to 140 kg/m3 if fish are healthy and hardy, and the water exchange is high, such as in a large-mesh net enclosure;
- up to 90 kg/m3 if the fish are in good condition and there is a moderate water exchange or water is well-aerated;
- up to 50 kg/m3 if the water exchange is limited, such as in a storage tank or pond, or if fish are more sensitive

For Increment in Price we need to provide Live / fresh fishes to end customer ensuring quality , Freshness and taste .

सत्यमेव जयते

एन एफ डी बी
NFDB

Entrepreneur Models in Fisheries and Aquaculture

National Fisheries Development Board
Department of Fisheries
Ministry of Fisheries, Animal Husbandry & Dairying
Government of India

Entrepreneur Models in Fisheries and Aquaculture

Eligible Beneficiaries under Entrepreneur Model

- Individual entrepreneurs
- Farmer Producer Organizations (FPOs)
- Self Help Groups (SHGs)
- Cooperatives / Companies / Start-ups
- Women entrepreneurs (eligible for enhanced assistance)

Entrepreneur Models in Fisheries and Aquaculture

Funding Pattern

Government assistance	Beneficiary contribution	Bank loan (minimum limit)
General Category: **up to 25%** with a **ceiling limit of 1.25 crore** on the overall project cost (maximum 500 crore) **SC/ST/Women Category**: **up to 30%** with a **ceiling limit of 1.5 Crore** on the overall project cost (maximum 500 crore). The **subsidy** shall be released in **three instalments** 20:50:30 percentages	**Minimum 10% of the total project cost maximum up to 40%**	**General Category – upto 65% of the total project cost** **SC/ST/Women – upto 60% of the total project cost**

Entrepreneur Models in Fisheries and Aquaculture

Checklist of documents

Application form as per NFDB format
Specify whether new project or expansion of existing project
In case of expansion of the existing facilities, note on year of establishment, present status of the unit, geotagged photographs, and justification for scaling up or expansion of facilities or business model.
DPR
Financial statement of previous three years along with GST / ITR / Audit report
Firm /company registration document
Technical feasibility report of the project (Authorised by state fisheries department/ICAR institute)
Detailed cost estimates for civil construction works as per the present/ latest CPWD DSR certified by an authorized Govt. Civil Engineer.
Detailed layout and design depicting all the proposed activities (certified by govt civil engineer).

Entrepreneur Models in Fisheries and Aquaculture

Checklist of documents

Quotations for Inputs/ Machinery/Equipment (if any)
CRZ clearances, NOC from the competent authority, license, Bio-security, and Environment concerning issues (if required).
Land documents own/lease period (10 Years) (Registered lease documents)
Geotagged photos of vacant land in which the project is proposed to be implemented/established.
Documentary evidence of the availability of land and statutory clearances/permissions/licenses, wherever required.
Permission from the local authority / State government department.
Provide the current sources of income (supported by relevant documents)

Entrepreneur Models in Fisheries and Aquaculture

Checklist of documents

Bank consent letter from Nationalised/ Scheduled Bank to provide a loan (to be signed by the Competent authority of the bank on the bank letter head along with email and contact person details) – Format attached.
Declaration in the prescribed format.
CIBIL (Credit Information Bureau India Ltd) score sheet to be furnished.
If society/firm/company needs to give a declaration of resolution by all the members for taking up the activity.
Details including address, email id, and mobile number of the consultancy firm/Consultant/ technical expert supporting technically in implementing the project and details of Govt /Private technology to be used.
Any other details which is essential for the project

Entrepreneur Models in Fisheries and Aquaculture

Preparation of Detailed project report (DPR)

- Project title
- Location of the project
- Need of the project
- Objectives of the project
- Land particulars
- Resources available
- Proposed total project cost
- Funding pattern
- Description of the project and components (in detail)
- Detailed breakup of the capital and operational cost
- Clear timelines (in form of a Bar Chart) for the completion of the project
- Cost-benefit analysis/ Financial viability
- Anticipated benefits in quantifiable/assessable terms, especially in enhancement of production, employment generation, etc.
- Expected Outcome of the Project

National Conference

Fisheries and Aquaculture Infrastructure Development Fund (FIDF) Credit Guarantee Scheme under the FIDF

Department of Fisheries
Govt. India

10th Jan., 2026

Objectives of FIDF

1. Creation and modernization of capture & culture fisheries infrastructure

2. Creation of Marine/ Inland Aquaculture Infrastructure

3. Reduce post-harvest losses and improve domestic marketing facilities through infrastructure support

4. To bridge the resource gap and facilitate completion of ongoing infrastructure projects.

Eligible Entities

- State Governments / Union Territories
- State Owned Corporations/ Govt. Sponsored / Supported Organizations
- Fisheries Cooperative/ Federations (including FISHCOPFED etc.)
- Panchayat Raj Institutions/Self Help Groups (SHGs)/ NGOs
- Cooperatives, collective groups of fish farmers & fish producer groups/ FFPO/Cs etc.
- Physically Disabled SCs/STs/Marginal Farmers, Women & entrepreneurs,
- Private Enterprises/Entrepreneurs

Activities under FIDF

Sl No.	Components	Unit Cost (Rs. in lakhs)
(i)	(ii)	(iii)
1	Establishment of Fishing Harbours	15000.00
2	Establishment of Fish Landing Centers	1000.00
3	Construction of Ice Plants (both Marine and Inland Fisheries Sectors)	100.00
4	Construction of Cold storage (both Marine and Inland Fisheries Sectors)	100.00
5	Fish Transport Facilities (Marine & Inland Fisheries Sector)	20.00
6	Integrated Cold Chain (Marine & Inland Sector)	500.00
7	Development of Modern Fish Markets	100.00
8	Setting up of Brood Banks	1000.00
9	Development of Hatcheries	50.00
10	Development of Aquaculture	7.00
11	Modernization State Fish Seed Farms	500.00
12	Establishment of state of art of Fisheries Training Centres	500.00

Activities under FIDF

Sl No.	Components	Unit Cost (Rs. in lakhs)
(i)	(ii)	(iii)
13	Fish Processing Units	4674.00
14	Fish Feed Mills/Plants	
	(a) Feed mills of minimum 4 to 5 tonne per day capacity	10.00
	(b) Feed mills/plants of minimum 10 tonne per day capacity	650.00
15	Establishment of Cage culture in Reservoir	3.00
16	Introduction of Deep Sea Fishing Vessels	80.00
17	Establishment of Disease Diagnostic Laboratories	150.00
18	Development of Mariculture	
	(a) Sea cage culture	5.00
	(b) Hatcheries	50.00
	(c) Nursery Area	6.00
	(d) Sea weed/Bivalve/Pearl cultures (Lump Sump)	4225.00
19	Establishment of Aquatic Quarantine Facilities	2500.00
20	Any other innovative projects/activities designed to enhance fish production/productivity/value.	Lump Sum

Interest Subvention And Lending Rate of Interest: Benefits

3%

Up to 3% **Interest Subvention** per annum for all EEs

>5%

Lending Rate of interest: Not lower than 5% per annum

12 years

Repayment period of 12 years including **Moratorium of 2 years**

0.6%

The interest subvention also includes **Cost of Reduction** of interest rate and uniform **margin of 0.6% towards** funds **management charge and risk coverage costs** to the NLES.

FISHERIES AND AQUACULTURE INFRASTRUCTURE DEVELOPMENT FUND (FIDF) ONLINE PORTAL

https://www.fidf.in

भारत सरकार
GOVERNMENT OF INDIA

मत्स्यपालन, पशुपालन और डेयरी मंत्रालय
MINISTRY OF FISHERIES, ANIMAL HUSBANDRY & DAIRYING

मत्स्यपालन विभाग
DEPARTMENT OF FISHERIES

SKIP TO MAIN CONTENT

FISHERIES AND AQUACULTURE INFRASTRUCTURE DEVELOPMENT FUND

Department of Fisheries,
Ministry of Fisheries , Animal Husbandry & Dairying
Government of India.

Azadi Ka Amrit Mahotsav

NFDB

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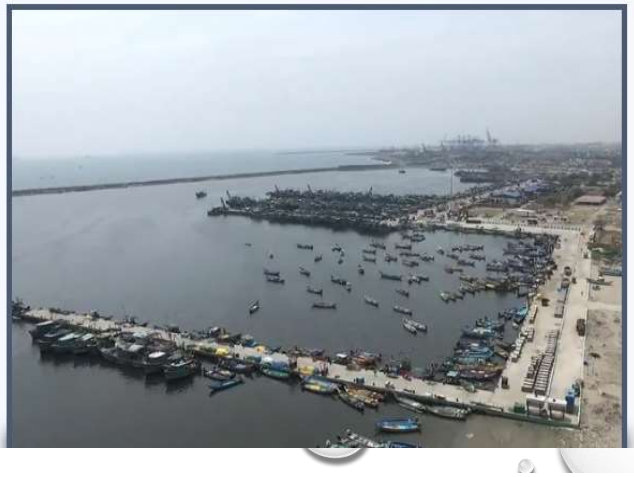
https://www.fidf.in/login

FISHERIES AND AQUACULTURE INFRASTRUCTURE DEVELOPMENT FUND (FIDF)

The Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India has set up a dedicated Fisheries and Aquaculture Infrastructure Development Fund(FIDF). FIDF envisages creation of fisheries infrastructure facilities both in marine and inland fisheries sectors and augment the fish production to achieve the target of 15 million tonnes by 2020 set under the Blue Revolution. Besides, the FIDF aims to achieve a sustainable growth of 8-9 per cent, in a move to augment the country's fish production to the level of about 20 million tonnes by 2022-23.



सत्यमेव जयते

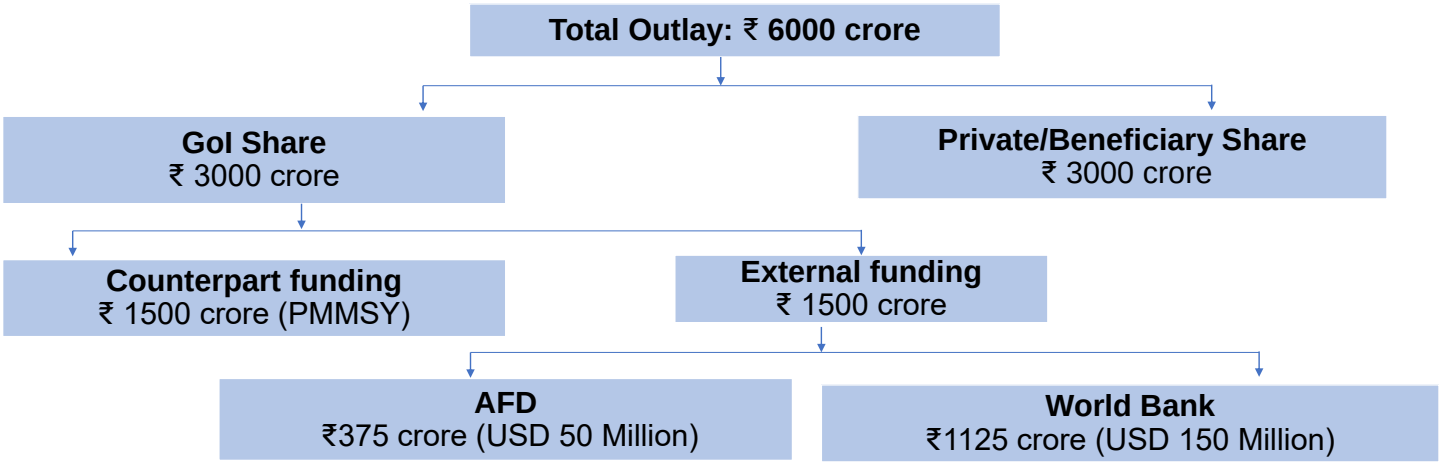
Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PMMKSSY)

(A Central Sector Sub-Scheme under PMMSY)

Department of Fisheries
Ministry of Fisheries, Animal Husbandry & Dairying
Government of India

PM-MKSSY Overview

- **PM-MKSSY is a World Bank and AFD assisted Project**
- **Approved by Cabinet** on 8th February 2024 as **Central Sector Sub-scheme** under PMMSY
- **Implementation Period:** 2023-24 to 2026-27
- **Funding Pattern**: 100% Central Assistance
- **Agreements Signed**: AFD (Mar'24) & World Bank (Jul'24)



PM-MKSSY Aims and Objectives

01 **Gradual formalization** of the unorganized fisheries sector including creation of work based digital identities

02 **Facilitating access to institutional finance** including working capital to expand their operations

03 **One-time incentive for buying** aquaculture insurance

04 **Incentivising fisheries and aquaculture microenterprises to improve value-chain efficiencies** and creating job

05 **Incentivising micro & small enterprises in fisheries sector to establish supply chains of safe fish and fishery products**

Component 1-A: Facilitating Access to Institutional Finance

Access to Institutional Finance

- **Reimbursement of processing fee and service charges by banks/financial institutions** for priority sector loans and expenditure towards documentation
- Financial literacy **training and extension support**
- **Awareness Campaigns** on fisheries sector for staff of **financial institutions**

Financial Benefits

- Financial support in form of 'success fee'
- **Upto Rs 5000 paid to beneficiaries on successful loan:**
  - Flat amount of ₹ 5000 if submission of bankable project report is required by the bank **OR** fee as per below loan slab

S. No.	Loan slab	Success fee
1	upto ₹ 5 lakh	₹ 3,000
2	>₹ 5 lakhs upto ₹ 10 lakhs	₹ 4,000
3	>₹ 10 lakhs upto ₹ 50 lakhs	₹ 5,000

Component 1-B: Facilitating adoption of aquaculture insurance

- **Objective:** Facilitating Creation of appropriate and affordable aquaculture crop insurance products
- **Implementing agency :** NFDB
- **Coverage Target: One lakh hectares** of aquaculture
- Create **efficient delivery channels** for offering insurance to aquaculture farmers
- **'Onetime incentive'** for aquaculture insurance purchased **for one crop cycle only**

Aquaculture Farms	Other Aquaculture Systems
▪ **Incentive**: 40% of the cost of premium (Limit: ₹25,000 per ha of WSA) ▪ **Maximum incentive**: ₹100,000 for up to 4 ha (Farms less than 1 ha: Incentive paid on pro-rata basis)	▪ **Types**: Cage culture, RAS, bio-floc, raceways, etc. (Maximum unit size eligible: 1800 m^3) ▪ **Incentive**: 40% of premium (**Maximum incentive**: ₹1 lakh)

- Additional Incentive for SC, ST, and Women Beneficiaries: 10%
- **Insurance Purchased after 1st April 2023 also eligible for availing one time incentive**

Component 2: Supporting microenterprises to improve fisheries sector value chains efficiencies

- **Total investment :Capital investments** on new plant and machinery/ equipment + **Salary bills** for additional jobs created in the year of application made under the scheme
- **Computation of Performance Grant:**
  - **General Category**: **25%** of total investment or **₹35 lakhs**, whichever is lower
  - **SC, ST, and Women-owned microenterprises**: **35%** of total investment or **₹45 lakhs**, whichever is lower
  - **VLO and Federations of SHGs, FFPOs, and Cooperatives**: **35%** of total investment or **₹200 lakhs**, whichever is lower
- **Relative Weights of Performance Criteria :**Jobs Created: **50%** and Investment Made: **50%**
- **Performance Grant for jobs created/ maintained :₹15,000** per woman and **₹10,000** per man per year
- Investment made **on or after 1st April 2023** will be **eligible** for performance grant

Emphasis on **decarbonisation, improved energy efficiency, and use of renewables, improved hygiene, and waste/pollution management.**

Refer ANNEX-2

Component 3: Adoption and expansion of fish and fishery product safety and quality assurance systems

- **Performance grant** against investment made for **fish product safety and quality assurance systems** and creation and maintenance of jobs **by micro- and small- enterprises**
- **Total investment :**Capital investments made on new plant and machinery + Salary bills for additional jobs created in the year of application made under the scheme.
- **Computation of Performance Grant:**

Microenterprise	▪ **Genera**l Category: **25% of total investment or ₹35 lakhs**, whichever is lower ▪ **SC, ST, and Women**: **35% of total investment or ₹45 lakhs**, whichever is lower
Small Enterprise	▪ **General Category: 25%** of total investment or **₹75 lakhs**, whichever is lower ▪ **SC, ST, and Women: 35%** of total investment or **₹100 lakhs**, whichever is lower
VLO, Federations of SHGs, FFPOs, and Cooperatives:**35%** of total investment or **₹200 lakhs**, whichever is lower	

- **Relative Weights of Performance Criteria :**Jobs Created: 50% and Investment Made: 50%
- **Performance Grant for jobs created/ maintained :₹15,000** per woman and **₹10,000** per man per year
- **Reimbursement of Laboratory Tests charges** against self-reporting of safe fish
- Investment made on or after 1st April 2023 will be eligible for performance grant

GAP, BAP, disease management, waste management, quality and safety standards, certification, traceability etc.