सत्यमेव जयते

ANNUAL REPORT
2018-19

National Fisheries Development Board

Department of Fisheries,
Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India
Hyderabad-500 052

From the Chief Executive's Desk… … …

The National Fisheries Development Board, under the Ministry of Fisheries, Animal Husbandry and Dairying, have been putting concerted efforts in bringing a paradigm shift in the Fisheries sector through introduction and dissemination of frontier technologies, production and dissemination of quality fish varieties and capacity building.

This ***Annual Report 2018-19*** *of NFDB highlights the ongoing activities and the achievements NFDB made during the fiscal year. During 2018-19, NFDB sanctioned 260 new projects and released financial assistance to a tune of Rs. 91 crore to various Implementing Agencies. NFDB, in collaboration with the Implementing Agencies conducted 423 Training Programmes and trained 23,680 farmers, fishers, entrepreneurs, State Officers etc. on various aquaculture and fisheries technologies/activities. During the fiscal year, the Board examined 438 project proposals received under CSS- Blue Revolution Scheme and recommended to the Ministry for release of funds. NFDB has also inspected and evaluated Blue Revolution Projects sanctioned for during 2016-17 and furnished report to the Ministry.*

NFDB is committed towards achieving the goal of ***"Blue Revolution"*** *to increase the fish production & productivity and to double the farmers' income through fisheries and aquaculture. We are able to achieve this progress and advancement with the continued support from Department of Fisheries, Govt. of India and cooperation from various Stakeholders from State Governments, ICAR and State Institutes, Training Centres and Professional bodies across the country.*

I. Rani Kumudini, IAS
Chief Executive, NFDB

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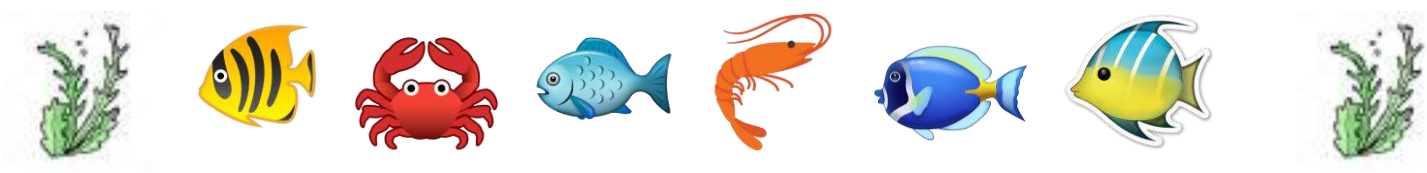

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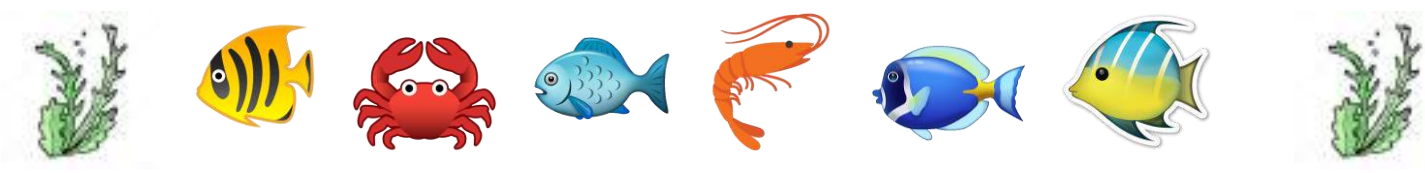

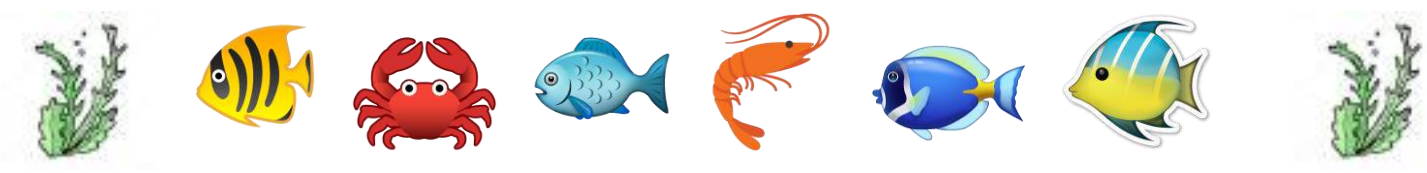

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PART-I
INTRODUCTION

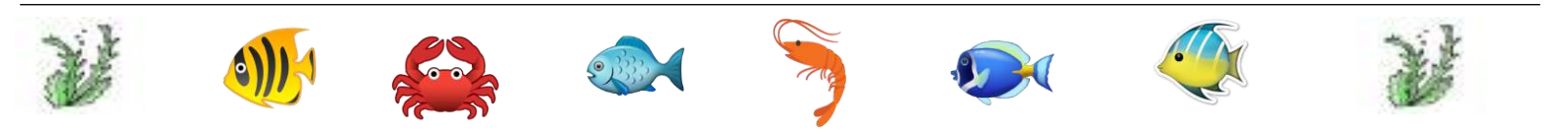
INTRODUCTION

Fisheries and Aquaculture constitute an important economic activity, with a vast potential for sustainably exploiting a wide variety of inland and marine fisheries resources in the country. Currently there is a shift in emphasis from capture fisheries to culture-based capture fisheries and from semi-intensive to intensive aquaculture and from empirical farming to knowledge-based farming. The sector offers vast scope for rural development, nutritional security, employment generation, gender equality as well as for export earnings.

NFDB Initiatives

NFDB has been directly implementing some key projects on emerging and innovative areas such as Cage Culture, Recirculation Aquaculture System (RAS), Biofloc Technology (BFT), Quality Seed Production, and Value Chain Development etc. All these programmes aims at environmental sustainability, ensuring supply of certified inputs (seed, feed, etc.), better management practices, traceability, hygienic handling, processing and value-addition in a certified plant, shipping, and delivery of wholesome products to consumers, etc. Technology adaptation was facilitated by providing support to: (i) Setup of the Technology, (ii) Input Assistance, (iii) Service Support and (iv) Capacity Building, on a large scale in clusters so that a visible impact is created for further propagation of technology. Besides, NFDB also scrutinize projects proposals received from the States/UTs under Blue Revolution and recommend to Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying, Govt. of India, monitored and evaluate its implementations.

Further, ***'Nudge as a tool in Behavioural Intervention'*** in fisheries development was successfully employed in motivating: (i) Palk Bay Fishermen Fishing in Deep-Sea; (ii) Fish Farmers Culturing Improved Varieties of Fish; (iii) Stakeholders Successfully adopting Quality Management Practices in Aquaculture; and (iv) building capacities and creating awareness among fish farmers, marketers and consumers through Fisheries Extension and Outreach Programmes, all of which led to increase in fish



production, productivity, economic gain, increased fish consumption, and overall hygiene and cleanliness in the modern fish markets.

NFDB Action Plan

During 2018-19, NFDB implemented the Action Plan at a Total Projects Cost of Rs.301.98 crore and a Central Share of Rs.125 crore. Highlights of the major projects are as follows:

Promotion of Aquaculture Technologies

1. Cage Culture Projects: Cage Culture brings in new opportunities for optimizing fish production from reservoirs, lakes, floodplain wetlands, as well as in estuarine/ brackish-waters and in the seas, generating incomes to fishers, farmers and entrepreneurs. NFDB is promoting cage culture with an integrated approach as an alternative livelihood and income generation programme. NFDB set a target of installing 1000 Cages in selected Reservoirs, 1000 in Brackishwaters and 3000 in the open sea, besides funding projects for development of broodbank, seed production and demonstration of high-value marine fish culture. Total outlay of these Projects is Rs. 22.81 crore.

2. Intensive Aquaculture Technologies (Low Cost RAS for Fish Culture): Recirculation Aquaculture System (RAS) is a technology wherein water is recycled and reused after bio-filtration and removal of suspended matter and metabolites. It is used for high-density culture of various species of fish utilizing minimum land area and water. 100 units of low-cost/ backyard type RAS Units are aimed to be established across the country to augment fish production & productivity. Project Cost is Rs.3.57 crore.

3. Promotion of New & Improved Varieties of Fish:

(i) Network of Seed Growing Centres (Quality Seed Programme): Nearly 50% of aquaculture production in India is from freshwater fish farming especially Indian Major Carps (IMC). In order to prevent inbreeding, genetic deterioration and poor growth, NFDB took up popularisation of genetically improved quality seed ensuring

faster growth rate, increased fish production, profitability and economic gain for the fish farmers. It is targeted to replace 1/3rd of normal seed with that of *Jayanti Rohu*, *Improved Catla* and *Amur Common Carp*, which is about 500 crore spawn, by providing One-time Inputs Cost. Total outlay of the Project is Rs.5.00 crore. Infrastructure for production and rearing of seed was created at a cost of Rs.2.05 crore.

(ii) Creation of Infrastructure for Seed Production & Dissemination:

(a) High-value Fish Culture: Marine fish production in India is stagnant at about 4 million tonne; Sea Cage Farming of high value marine fish and shellfish is promoted for enhancing production while simultaneously reducing fishing pressure on natural stocks and providing livelihood to coastal communities. Broodstock development, hatchery technology, seed rearing and Sea Cage Farming of high-value marine fishes such as Cobia, Silver Pompano, Seabass and Groupers are being promoted at various locations along both the coasts of India. Project Cost is Rs.5.15 crore.

(b) Projects for State-specific Needs: Recognising that States have specific issues and local needs, special emphasis has been laid to fund some need-based Fisheries Projects as proposed by the States. NFDB funded for the establishment of a Mud Crab Hatchery and an Integrated Cold Chain by entrepreneurs in Andhra Pradesh and for promoting Trout Farming in Anantanag district of Jammu & Kashmir. Total outlay under this head is Rs.4.99 crore.

(iii) Advanced Technologies Demonstration (Cryobank, Feed, Seaweed, etc.): Scientific research and experimental studies by the ICAR Fisheries Research Institutes and various Universities over the years have generated several new and innovative technologies that are adaptable, scalable and sustainable. Effective transfer of these technologies from lab to land through demonstration and adoption by stakeholders across the country was promoted to fast track the overall fish production and productivity as envisaged in the Blue Revolution Scheme. Technologies promoted include: (i) Propagation and production of Small Indegenous Species (SIS) of Minor Carps; (ii) Cryopreservation of milt; (iii) Demonstration of efficacy of specialised Carp








Feeds; (iv) Mass production of Seaweed spores and plantlets; (v) Demonstration of RAS, Biofloc and Aquaponics technologies; etc. Total Projects outlay is Rs.4.15 crore.

4. Quality Management in Intensive Aquaculture:

(i) Aquatic Animal Health Labs (AAHLs): A network of new diagnostic laboratories with enhanced competency and wider scope are being promoted through interested Govt. Institutes, existing labs and entrepreneurs. Under the National Fish Quality Management Network Programme, 18 AAH Labs were sanctioned in 10 States. Project Cost Rs.8.12 crore.

(ii) National Surveillance Programme for Aquatic Animal Diseases (NSPAAD): Expansion and intensification of Aquaculture increases risk of disease outbreak in cultivated organisms resulting in huge economic losses to fish and shrimp farmers in the country. With the objective of putting in place an institutionalised mechanism for disease surveillance and to strengthen reporting system, NFDB funded a Project ('NSPAAD') to ICAR-National Bureau of Fish Genetic Resources (NBFGR) as the Lead Centre with 28 Collaborating Centres in 22 States/UTs of fisheries and aquaculture importance. Project outlay Rs.5.04 crore.

(iii) Aquatic Quarantine Facility (AQF): The Aquatic Quarantine Facility plays a key role in ensuring SPF status of imported brood stock of shrimp *Litopenaeus vannamei*. NFDB supported MPEDA-RGCA in the establishment and expansion of AQF in 4 phases for a cumulative capacity of accommodating more than 7 lakh imported brood stock to meet the growing demand for *L. vannamei* seed and ensured sustained development of shrimp aquaculture in the country. Project cost is Rs.5 crore

Sustainable Aquaculture Development (Livelihood Projects)

Around 14.5 million people are engaged in fisheries at the primary level, of which more than 4 million are marine fisher-folk, and many more in allied activities. They are dependent on the inland open water bodies and the seas for eking out their livelihoods. Innovative and low-cost technology projects were launched for their

inclusive development, capacity building, arranging institutional finance, facilitating backward and forward linkages, ensuring their nutritional and financial security and economic prosperity.

1. Seaweed Cultivation: *Seaweed Cultivation an Alternate Livelihood for Coastal Fisher Population'*, especially fisher-women, was launched to provide alternate income source especially during fishing ban period, and also to meet ever increasing industrial demand for manufacture of Agar, Agarose, Carrageenan and Alginates from Seaweeds. Total project cost is Rs.1.84 crore.

2. Development of Wetland through community participation: The *'Wetland Fisheries Development Project through Community Participation'* in Bihar and Assam was launched to realise the production potential of Wetlands (1500-2500 kg/ha/year) by promoting Culture-based Capture Fisheries (CBCF). Total outlay is Rs.2.27 crore.

3. Fish Culture in Community Ponds in Aspirational Districts: For inclusive growth of backward classes of people, NFDB took up the initiative of fisheries development in Community Ponds and Tanks in 43 'Aspirational Districts' in 9 States. The activity involves rearing quality fish seed to fingerling size for sale to fish farmers as well as for grow-out in their own ponds and tanks. Project outlay is Rs.4.87 crore.

Fisheries Infrastructure Development

Creation of new infrastructure and strengthening the existing one, both in marine and inland fisheries sectors would augment fish production. For this purpose Govt. of India has set up a dedicated Fisheries and Aquaculture Infrastructure Development Fund (FIDF) of Rs.7522.48 Crore for a period of 5 years from 2018-19 to 2022-23. NFDB is the Nodal Implementing Agency (NIA) to scrutinize, evaluate and appraise the proposal submitted by Eligible Entities (EEs) and place before Central Approval and Monitoring Committee (CAMC) for approval. Some of the Infrastructure Development Projects are Conversion of Bottom Trawlers into Deep Sea Fishing

Vessels; Fish Transport Vehicles; Cold Chain Development; and Utilising Solar-Wind Energy in Fisheries Sector.

Creation of Skilled Manpower (HRD Programmes)

Training, Skill Development and Capacity Building have been an integral part of fisheries development, especially with respect to adoption of new and innovative technologies by fishers, fish farmers and other stakeholders in all fisheries related activities both marine and inland. Training modules were formulated keeping in view the specific need of technologies to be adopted by target groups. More than 25,000 beneficiaries were trained in collaboration with ICAR and DoF-GoI Institutes, Fisheries Universities/Colleges, etc. Total outlay is Rs.9.42 crore.

Extension Services and Outreach

1. Aqua-One Center for Fish Farmers: A network of 120 *"Aqua One Centers (AOCs)"* were established at different strategic locations in 15 States across the country to provide Information & Communication Technology (ICT)-enabled Aquaculture Support Services, disseminate and deliver proven technologies and facilitate their wider adoption by registered fish farmers, thereby facilitating the sector's overall growth. Total outlay of the Quality Seed Project is Rs.10.00 crore, and Rs.0.5 crore for Workshops, Training and Awareness Programmes.

2. Aqua Knowledge Park (AKP) at Moolapalem: An AKP is proposed to be established in the 97.50 acre land in possession of NFDB at Moolapolam in Srikakulam district, Andhra Pradesh, for showcasing the latest Aquaculture and Post-harvest Technologies by constructing multispecies fish and shrimp hatcheries, nursery, rearing and production ponds, analytical and diagnostic labs, fish processing, storage, transport and marketing facilities, etc., besides hostel accommodation to farmers/ entrepreneurs from all over the country for training & demonstration. A Special Purpose Vehicle (SPV) has been created and the MPEDA-Rajiv Gandhi Centre for Aquaculture (RGCA), a Govt. of India Organization, offered to develop and operate the Aquaculture Knowledge Park. Total outlay of the Project is Rs.5.0 crore

3. E-Services (E-Governance, M&E and Other Activities): Apart from introducing E-File Management System (FMS), NFDB is now registered with Public Financial Management System (PFMS). Further, two integrated Web Portal and Mobile Apps were developed: (i) *Fish Market and Price Information System* (FMPIS) in collaboration with ICAR-CMFRI, for accessing updated fish prices at various markets across the country; and (ii) *Mera Matsya Dhan* (MMD) in collaboration with NICSI, for monitoring and evaluation of projects under Blue Revolution Scheme. Monitoring & Evaluation of Projects funded during 2017-18 has also been taken up. Total outlay is Rs.4.00 crore.

Scrutiny, Monitoring and Evaluation of CSS BR Projects

NFDB has been entrusted with scrutinising and recommending project proposals to Dept. of Fisheries, Govt. of India and to carry out "Monitoring and Evaluation". During 2018-19, 589 proposals were received from States/UTs and Institutes and scrutinised out of which 438 projects were recommended to Dept. of Fisheries, Govt. of India for release of funds. Monitoring and evaluation for CSS BR schemes of 2016-17 at 22 States were carried out and report furnished to the Dept. of Fisheries, Govt. of India. NFDB also visited North Eastern States for monitoring and evaluation for CSS BR schemes of 2016-17 and furnished report to the Dept. of Fisheries, Govt. of India. In line with it, NFDB also identified 50 backward districts having potential for fisheries development by analysing certain indicators relating to agriculture, dairy and fishery in each state.

PART-II

PROMOTION OF AQUACULTURE TECHNOLOGIES

PROMOTION OF AQUACULTURE TECHNOLOGIES

With the increase in demand for fish, aquaculture has been highly intensified in the recent years. Advance and innovative culture technologies such as Recirculating Aquaculture System, Biofloc based farming, Aquaponics and Aquapods have been introduced and have even gone to the level of employing artificial intelligence, robots, sensors, drones etc to detect the hunger level of the fish and feed them accordingly or to detect the number of fish, size, possible signs of disease and corresponding treatment within the units.

India is the second largest aquaculture and highest farmed shrimp producer in the world. Aquaculture is rapidly growing with an annual growth rate of over 7%. Fish farms in our country too have now established advanced systems like high-density RAS for finfish, shrimp, ornamental fish, Aquaponics, Bioflocs, etc and even use sensors to monitor water quality in the system to enhance productivity and yields. NFDB is spearheading in introducing innovative and advance technologies. The Board organised various exposure and training programs in India and abroad for State and Central Government employees and progressive farmers for adoption of best practices and innovative technologies. NFDB is also taking initiatives in demonstrating new technologies developed by fisheries research institutes and fixing unit cost before the technology is disseminated to the farmer's field. Some of the technologies implemented by NFDB are Cage Culture, RAS, Biofloc, Aquaponics, etc. To support these intensive systems, NFDB is ensuring production and supply of fish seed of improved varieties to farmers. Also, Aqua One Centers and Health Laboratories have been established to cater to the needs and support service requirements of the farmers.

II.1. Cage Culture

Cage Culture is an aquaculture production system wherein fish are reared in captivity in the enclosed space of net cages that allow free exchange of water with the

surrounding water body. Cages can be of different types such as floating cages, mid-water cages with buoyed "feeding neck" and bottom-set cages; single and multiple units, rigid and flexible cages; self-supporting and raft-supported cages; cages occupying the whole water column (from surface to bottom), etc. Type and dimension of cage is selected based on the targeted fish species and production, hydrographical conditions like depth, water, waves and tides, etc.

Considering India's rich and varied open water resources, NFDB initiated cage culture in various water bodies (inland, brackish and open sea water) in an integrated approach in collaboration with Dept. of Fisheries/ Fisheries Corporations or Federations of States/UTs/Institutes. To cope up with the non-availability of quality fish seed, NFDB in collaboration with Central and State Fisheries Institutes also initiated seed production and nursery rearing of some selected high-value culturable fish species. In 32nd Executive Committee (EC) meeting of NFDB, approval was accorded for the same under the Annual Action Plan for 2018-19.

(i) Inland Cage Culture

(a) Introduction: Inland cage culture offers new opportunities for optimizing fish production from reservoirs, lakes, floodplain wetlands and for developing new skills among fishers and entrepreneurs to enhance their incomes. Fast-growing and economically important fish species such as Pangasius and GIFT Tilapia are being widely farmed in cages in inland water bodies.

(b) Technology Provider/Partner: In India, cage culture was attempted for the first time by ICAR-CIFRI, Barrackpore, West Bengal during 1970s in three types of environments: (1) Swamps having low dissolved oxygen concentration, using air-breathing fishes, (2) Running waters of the Yamuna and Ganga Rivers at Allahabad, using major carps and (3) Static water body in Karnataka, using Common Carp, Catla, Silver Carp, Rohu, Snakeheads and Tilapia. CIFRI achieved success in producing fingerlings in floating cages installed in Pahuj Reservoir (Uttar Pradesh) and Dahod Reservoir (Madhya Pradesh) during 2007-2009. Thus, inland cage culture is a proven

technology that is adaptable and scalable. The Unit Cost of Rs. 3 lakh/cage (including Set-up and one-time Input Cost) was arrived in consultation with ICAR-CIFRI and is in line with the CSS-Blue Revolution Guideline. The Project on Inland Cage Culture was approved by 32nd Executive Committee (EC) Meeting of NFDB and approval was accorded under the Annual Action Plan for 2018-19.

(c) Technical Details: The Cage comprises of a rigid floating frame (usually made of HDPE/PVC) for support and a submerged knotless nylon netting as the cage body. For ease of operation and management, cage with dimensions 6 m (length) x 4 m (width) x 4 m (depth) is considered a standard unit. Multiple cage units in a battery of 6, 12 or 24 are arranged in a caterpillar-like design with catwalks for easy access to the fish stock, and a floating hut/store room.

(d) Project Details:

Amount Rs. in Lakh

Project	Sanctioned Units	Sanctioned Amount	Sanctioned Year	Amount Released in 2018-19
Cage culture in Pawana Reservoir	24	17.8	2018-19	8.9
Integrated development of Kasarsai Reservoir	48	59.61	2018-19	29.80

(e) Implementing Agency: NFDB in collaboration with State Fisheries Department, Govt. of Maharashtra is implementing the project with an integrated approach as an alternative livelihood and income generation programme. Two projects were sanctioned with 50% NFDB assistance for installation of 72 cages along with other ancillary components at two major Reservoirs i.e. Pawana and Kasarsai. All the 72 cages have been installed in Pawana and Kasarsai Reservoir and culture is in progress.

(ii) Brackishwater Cage Culture

(a) Introduction: Brackishwater cage farming of high-value euryhaline fishes such as Seabass, Grouper, Mullets, Milkfish and Pearlspot has opened new avenues for producing these prized fishes. CMFRI has identified potential sites for brackish water cage aquaculture as an alternative to fishing for target fish species such as Milk Fish (*Chanos chanos*), Asian Seabass (*Lates calcarifer*), Grey Mullet (*Mugil cephalus*), Pearlspot (*Etroplus suratensis*) and Silver Pompano (*Trachinotus blochii*). The main objective of the project is to enhance production of these marine fish, empowerment of fishers, alternative livelihoods, income generation and rural development.

(b) Technology Provider/Partner: ICAR-CIBA developed and successfully demonstrated cage farming of Asian Seabass (*Lates calcarifer*) in Tamil Nadu, Maharashtra and Gujarat. Similarly, ICAR-CMFRI demonstrated cage culture in estuarine waters of Mangalore Coast of Karnataka. The Unit Cost of Rs. 2.5 lakh/cage was arrived based on the EoI. The project for brackishwater cage culture was approved in the 33rd Executive Committee (EC) Meeting of NFDB as included in the Annual Action Plan for 2018-19. Cage culture in brackish water is a proven technology that is adaptable and scalable.

(c) Technical Details: Three cages, each of 2 x 2 x 1.5 m (6 m^3) constitute a unit and are encircled by a bigger outer net (predator net) measuring 8 x 3 x 2 m. Cages may be free floating or fixed. Floating HDPE cages with GI pipe-frame are preferred as they last longer than bamboo framed floating cages. Cages measuring 4 x 4 x 3 m (48 m^3) are also used.

(d) Project Details:

			Amount Rs. in Lakh
Project	**Sanctioned Units**	**Sanctioned Amount**	**Amount Released in 2018-19**
Brackishwater cage culture in selected districts in Kerala and Karnataka	1000	1328.7	531.48
Cage culture in Sindhudurg District, Maharashtra	500	722.03	72.203

(e) Implementing Agency: NFDB sanctioned Rs. 13.29 crores to ICAR-CMFRI for installation of 1000 cages in Kerala and Karnataka on a pilot basis. The project was sanctioned in 2017-18 for a period of two years and hence carried forward to 2018-19. As approved by the 32nd Executive Committee Meeting and NFDB Annual Action Plan 2018-19, another 500 cages have been sanctioned during 2018-19 for upscaling the project in Sindhudurg District of Maharashtra with 50% NFDB assistance. Eighty cages have been fabricated at Arondo, Mochamod and Vijayadurg in Sindhudurg District of Maharashtra and 387 nos. of cages have been fabricated for installation at Kerala and Karnataka.

(iii) Open Sea Cage Culture

(a) Introduction: Our country has a long coastline of 8,118 km along the 9 Maritime States. According to CMFRI projection, even if 1% of the inshore waters is used for cage farming, around 8,20,000 cages can be deployed with a production potential of 3.2 MMT. Candidate species for sea cage farming include: Cobia (*Rachycentron canadum*), Silver Pompano (*Trachinotus blochii*), Seabass (*Lates calcarifer*), Snappers (*Lutjanus sp.*) and Groupers (*Epinephelus sp.)*.

(b) Technology Provider/Partner: Cage culture in marine waters was first attempted by ICAR-CMFRI during 2006–2009. In 2007, culture of juveniles of Bigeye Trevally (*Caranx sexfasciatus*) and Asian Sea Bass (*Lates calcarifer*) in floating cages were successfully demonstrated in Vizhinjam and Visakhapatnam coast. Subsequently, CMFRI also demonstrated cage culture of *Epinephelus spp, Trachinotus sp. Rachycentron sp. Lutjanus spp, Acanthopagrus spp*. and *Panulirus spp.* The Unit Cost of Rs. 5 lakh/cage was arrived based on the EoI floated and received by NFDB. The Project for Open Sea Cage Culture was approved by 33rd Executive Committee (EC) Meeting of NFDB and

approval was accorded under the Annual Action Plan for 2018-19. . Cage culture in open sea water is a proven technology that is adaptable and scalable.

(c) Technical Details: Sea Cage Culture as an integrated project comprises of Hatchery, Feed Plant, Ice Plant, Cold Storage, Refrigerated Truck, etc. Circular cages having minimum diameter of 6 m and depth of 4 m (113 m^3 volume) or Rectangular Cages measuring 6 x 4 x 4 m (96 m^3 volume) with an outer predator net on cage frame were installed at the selected sites. In a given location, a maximum of 20 cages are installed by a group of fishers/ society/ entrepreneur to form a cluster. The unit cost for fabrication and setting up of cages and one-time input is Rs.5 lakh/cage of standard size.

(d) Project Details:

Amount Rs. in Lakh

Sites	Implementing Agency	Sanctioned Units	Sanctioned Amount	Amount Released in 2018-19
Open sea cage culture of marine finfish along the coast of Ramanathapuram District, Tamil Nadu	TNJFU, Tamil Nadu	100	277.6	111.04
Extensive demonstration of technology of open sea cage farming of marine finfish along the territorial waters of coastal States	ICAR-CMFRI	100	515.00	103.00

(e) Implementing Agency: NFDB is implementing the project in collaboration with ICAR-CMFRI and Tamil Nadu Dr Jayalalitha Fisheries University (TNJFU) for culture of marine finfishes along the territorial waters of coastal States/UTs, mainly the Ramanathapuram coast of Tamil Nadu. Around 400 farmers were trained and HDPE cages were distributed for deploying in Palk Bay (Pamban, Munaikadu) and Gulf of

Mannar region (Mandapam). Forty-five cages have been installed and stocked with Cobia and Silver Pompano fingerlings.

II. 2. Intensive Aquaculture Technologies

Intensive Aquaculture is farming of aquatic organisms (fish, etc.) at higher densities adopting better management practices (BMPs) to increase production per unit land area and water volume. It is a vertical type of expansion with intervention of quality inputs and use of advance technologies. Some of the frontier aquaculture technologies used in India includes Recirculation Aquaculture System (RAS), Aquaponics, Biofloc Technology (BFT), etc. To promote adoption of such technologies by fish farmers, NFDB initiated various projects in collaboration with Fisheries Research Institutes and States.

(i) Recirculation Aquaculture System (RAS)

(a) Introduction: Recirculation Aquaculture System (RAS) is a technology wherein water is recycled and reused after filtration and removal of suspended matter and metabolites. Less than 10% of water is added daily to make up for splash out, evaporation and for the quantity used to flush out waste materials. The method is used for high-density culture of various species of fish utilizing minimum land area.

(b) Technology Provider/Partner: Backyard type RAS was developed by National Centre for Aquatic Animal Health, Cochin University of Science & Technology (NCAAH-CUSAT), Kochi for Tilapia, Pangasius and Pearlspot and the technology was promoted by NFDB on a pilot basis first in Kerala. The Unit Cost of Rs. 7 lakh/unit was arrived based on the cost estimation provided by NCAAH-CUSAT. RAS for Ornamental Fish and Shrimp Culture is taken up by Tamil Nadu Dr. J. Jayalalithaa Fisheries University (TNJFU) on demonstration mode and the cost was as per the cost estimation arrived by the University. The Project was approved by 32nd & 33rd Executive Committee (EC) Meeting of NFDB and approval was accorded under the Annual Action Plan for 2017-18 & 2018-19. RAS is a proven technology that is adaptable and scalable.

(c) Technical Details: There are three types of RAS currently under NFDB:

- **Low-Cost Backyard RAS:** The unit consists of a fish tank having dimensions of 6.7 m x 6.7 m x 2 m, to hold 90 m^3 (90,000 litre) water wherein three rectangular cages are suspended for stocking fish and easy of culture operations. The RAS Unit is designed to handle more than 50 fish/ m^3 and is most suitable for farming GIFT Tilapia and Pangasius. The unit cost is Rs. 7 lakh/unit (Rs. 5.6 lakh for setting up and Rs. 1.4 lakh for input and services) and has capacity to produce 3.0-3.2 tonne of fish per annum.
- **RAS for Ornamental Fish Farming:** TNJFU have set up an Aquatic Rainbow Technology Park (ARTP) at Chennai for breeding and culture of Ornamental Fish. The RAS unit will provide an optimised and conditioned system to reduce stress caused by water exchange and other environmental fluctuations. The unit consists of nine hatching, nine nursery and eight grow-out tanks.
- **RAS for Shrimp Farming:** TNJFU established an RAS unit for *L. vannamei* in a 75 m^2 area for demonstration and training purpose. The system consist of three tanks each with water holding capacity of 4.3 tonne, 6.3 tonne and 4.8 tonne respectively for sedimentation, bio-filtration and chemical treatment.

(d) Project Details:

Amount Rs. in lakh

Sl. No	Project	Units	Central Assistance Sanctioned	Amount Released in 2018-19
1	Setting up of Backyard RAS in Kerala	77	341.05	183.75
2	Setting up of Backyard RAS Demonstration unit at NFDB and NIRD campus, Hyderabad	2	16.55	16.55
3	RAS for Ornamental Fisheries: Aquatic Rainbow Technology Park (ARTP) using RAS Technology at Chennai	1	50.00	40.00
4	Setting up of RAS for *Litopeneaus vannamei* farming	1	24.08	12.04

(e) Implementing Agency: NFDB is implementing Backyard RAS project in collaboration National Centre for Aquatic Animal Health (NCAAH), CUSAT, Kochi. One hundred units of Backyard RAS were sanctioned to NCAAH for implementation on a pilot basis during 2018-19. Forty units of backyard RAS were established for 25 beneficiaries in Kerala during 2018-19, most of whom are women. Two units were established at NFDB-Campus and NIRDPR campus at Hyderabad for live demonstration and training purpose.

The RAS units implemented through Tamil Nadu Dr. J. Jayalalitha Fisheries University (TNJFU), Chennai are for Ornamental Fish and shrimp rearing. The units are established and used for rearing brood fish of Goldfish, Koi Carp, Cichlids, Angel Fish, Barbs and live bearers like Guppy, Molly, Platy, Sword Tail, besides *L. vannamei*. The same units are used for training and demonstration to farmers.

(ii) Biofloc Based Eco-Feed Development

(a) Introduction: Biofloc Technology (BFT) is a technique of enhancing water quality through conversion of fish metabolites with addition of carbon to the aquaculture system to form Bioflocs that are aggregates of suspended phytoplankton, bacteria, living and dead particulate organic matter, and grazers of the bacteria. The flocs are rich in protein (35-38%), vitamins and minerals.

(b) Technology Provider/Partner: Biofloc based eco-feed development was taken up by TNJFU on pilot basis and the unit cost arrived at was as per the cost estimation of the institute. The Project was approved by 33rd Executive Committee (EC) Meeting of

NFDB and approval was accorded under the Annual Action Plan for 2018-19. Biofloc technology is a proven technology that is adaptable and scalable.

(c) Technical Details: The project is for ex-situ development of novel biofloc meal on a mass-scale for higher floc density and yield for feeding the cultured species. The project has direct relevance to the field, for overcoming the environmental and biological limitation of higher densities, water usage limitations and for avoiding antibiotics use and also to make the entire culture disease free. The nutrient rich flocs harvested from the Raceway/ Tank is used as protein source in fish feed preparation or for directly feeding to fish/ shrimp.

(d) Project details:

		Amount Rs. in Lakh
Project	**Central Assistance sanctioned**	**Amount Released in 2018-19**
Developing Eco Feed for *L vannamei* Culture from Biofloc-based culture unit	50.00	25.00

(e) Implementing Agency: NFDB provided 50% financial assistance to TNJFU for developing eco-feed for Vannamei Shrimp Culture from Biofloc-based system. Raceway tanks for the production of Biofloc meal was constructed and provided with paddle-wheel aerator, water filling pipes inside the tanks, etc.

(iii) Aquaponic System

(a) Introduction: Aquaponics is an integrated fish and plant production technology, essentially comprising of two sub-systems, viz., 'Aquaculture' and 'Hydroponics'. The underlying principle is to efficiently utilize water to produce two crops rather than one and to partition and share nutrient resources between fish and plants. This farming system is commonly used in resource limited and urban areas to raise both fish and vegetable in an integrated system.

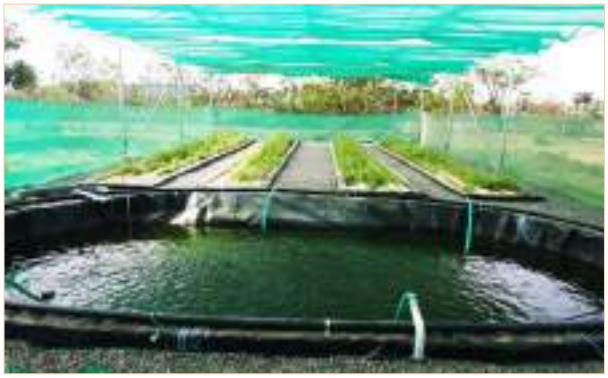
(b) Technology Provider/Partner: Aquaponics project is taken up by TNJFU on pilot basis and the unit cost arrived was as per the cost estimation of the institute. The Project was approved by 33rd Executive Committee (EC) Meeting of NFDB and approval was accorded under the Annual Action Plan of NFDB for 2018-19. Aquaponics is a proven technology that is adaptable and scalable.

(c) Technical Details: Aquaponics involve cultivation of horticulture plants along with fishes. It is basically a recirculation system, wherein fish are fed with quality floating pellet feed and water containing waste generated from fish is pumped into troughs having horticulture plants; the flow rate of water is to be adjusted with the help of the timer; the filtered water goes back to the fish tank. Green leaf-vegetables with low to medium nutrient requirements are well adapted to aquaponics systems.

(d) Project Details:

		Amount Rs. in Lakh
Project	**Central Assistance Sanctioned**	**Amount Released in 2018-19**
Establishment of Aquaponics Unit for training and demonstration to fish farmers at KVK Sikkal, Nagapattinam	10.66	7.46

(e) Implementing Agency: TNJFU through NFDB financial support of 50% has established an Aquaponics Units for Tilapia culture in an area of 500 m^2 and stocked with GIFT Tilapia (Chitralada strain).



II. 3. Promotion of New & Improved Varieties of Fish

(a) Introduction: Fish seed is a key input for aquaculture and one of the major constraints for aquaculture development is the lack of adequate quantity and quality of fish seed. It is estimated that there is a deficit of 13 billion fish fry per annum in the country. Prolonged use of the same brood fish of Indian Major Carps has resulted in inbreeding depression, genetic drift and consequent poor growth and yield. Through genetic selection and breeding Improved Varieties of Carps have been developed. Researchers from ICAR-CIFA, Odisha and KVAFSU, Karnataka brought forth improved variety of Rohu, Catla and Amur Carp that have increased growth rate and disease tolerance when compared to the normal variety.

However, these Improved Varieties did not gain popularity among the fish farmers for a number of years, owing to either lack of awareness and interest or the seed being not readily available in adequate quantity for stocking fish ponds and tanks. To overcome this situation, NFDB drew up an Action Plan for "Quality Seed Programme" with total Project Cost of Rs. 2,627 lakh during 2018-19.

NFDB also developed a network of fish hatcheries for large-scale production of seed of improved fish varieties. The Board through its NFFBB Centre, a network of seed growers, Aqua One Center and KVKs has arranged to supply 12.7 crore spawn of the improved fish varieties to 351 registered fish farmers covering 331 ha areas in 15 States. Higher growth performance of improved fish varieties has been reported as compared to the normal varieties, and 5.4 lakh tonne production was achieved.

(b) Technology Provider/Partner: The Improved Rohu variety "Jayanti Rohu" and "Improved Catla" were developed by ICAR-CIFA, Odisha. Similarly, "Amur Carp" which is a Hungarian Common Carp strain was developed by KVAFSU, Karnataka. Technology for breeding Murrel and Minor Carps and special diets for different growth stages of IMC were also developed by ICAR-CIFA. ICAR-CMFRI, Kerala developed technology for broodbank and seed production of Cobia and Silver Pompano. Cryobanking of milt of Indian Major Carps was developed by ICAR-NBFGR, Lucknow, Uttar Pradesh. Technology for Seaweed Spores production was developed by CSIR-CSMCRI, Bhavnagar, Gujarat. The projects were approved in the 33rd Executive Committee (EC) Meeting of NFDB under Annual Action Plan 2018-19.

(i) Establishment of Network of Seed Growers

In order to promote distribution of seed of improved fish varieties and to provide easy access to farmers, NFDB-NFFBB signed MoU with 18 hatcheries (6 hatcheries in West Bengal, 10 Hatcheries in Odisha, 01 hatchery in Bihar and 1 hatchery in Chhattisgarh). These hatcheries have capacity to produce more than 600 million seed per year. Creating the network of hatcheries and seed growers helped in maintaining the quality through exchange of broodstock, rearing hatchlings produced from each batch of fish spawning separately, and the use of broodstock management methods. NFDB also entered into MoU with ICAR-CIFA to supply breeder seed of improved varieties to NFFBB. In turn NFFBB is updating its broodstock and supplying the seed to farmers through the network system.

Under the project, the Board has established a network of 18 multiplier hatcheries in 4 States and set a target to replace one-third of the normal fish, which would be 500 crore spawn, with genetically improved varieties like Jayanti Rohu, Amur Common Carp and Improved Catla in 5 years. This will reduce inbreeding depression arising from use of same parent brooders or breeding within same family which have been the main issues of low survival and poor growth.

The details of Network Hatcheries are as follows:

Sl.	State	Name of the Hatchery	Production of Spawn	
			Production Capacity (crore)	Expected Production (Crore)
1.	Odisha	M/s Mallick fish seed Hatchery	2	JayantiRohu -3 Improved Catla-1
2.	Odisha	M/s. MaaDuladei Fish Seed Hatchery	2	JayantiRohu - 3 Improved Catla-1
3	Odisha	M/s. Fish Culture Development Centre	3	JayantiRohu -3 Improved Catla-1
4	Odisha	M/s Kailash Hatchery,	10	JayantiRohu - 5 Amur Carp - 5
5	Odisha	M/s Duba Fish Seed Hatchery	8	JayantiRohu -1 Amur Carp-1
6	Odisha	M/s Maa Budhi Jagulai Fish Seed Hatchery,	3	Amur Carp- 5
7	Odisha	M/s Sahoo Fish Seed Hatchery	2.5	JayantiRohu - 1
8	Odisha	M/s Nilanchal Fisheries,	3	JayantiRohu - 2 Amur Carp-1
9	Odisha	M/s. Sai Krishna Hatchery,	2	JayantiRohu - 1 Amur Carp-1
10	Odisha	M/s Sapan Fish Seed Hatchery	3	JayantiRohu - 1
11	West Bengal	M/s AnandKrishiKhamar	1	Amur Carp- 5
12	West Bengal	M/s MaaManasa Mata Hatchery	3	JayantiRohu – 3 Amur Carp-1
13	West Bengal	M/s RadhaDamodar Jew Fish Hatchery	3	JayantiRohu – 3 Amur Carp-1
14.	West Bengal	M/S Jamuna Fisheries	5	JayantiRohu - 3 Improved Catla-2 Amur Carp-1
15.	West Bengal	M/s Laha Fish Spawn Producer and Supplier,	5	JayantiRohu - 1 Amur Carp-1
16	West Bengal	M/s Dey Brothers	5	JayantiRohu - 3 Amur Carp-1
17	Bihar	M/s Baba Matasya Hatchery	2	JayantiRohu -1 Amur Carp-1
18	Chhattisgarh	M/s Blue Rising Fisheries and Technology LLP	1	Amur Carp-1

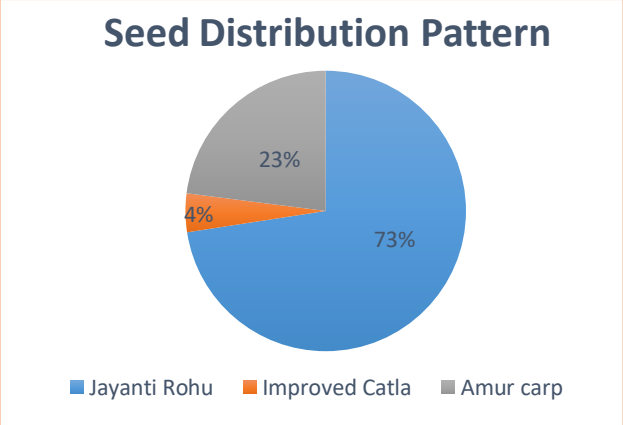




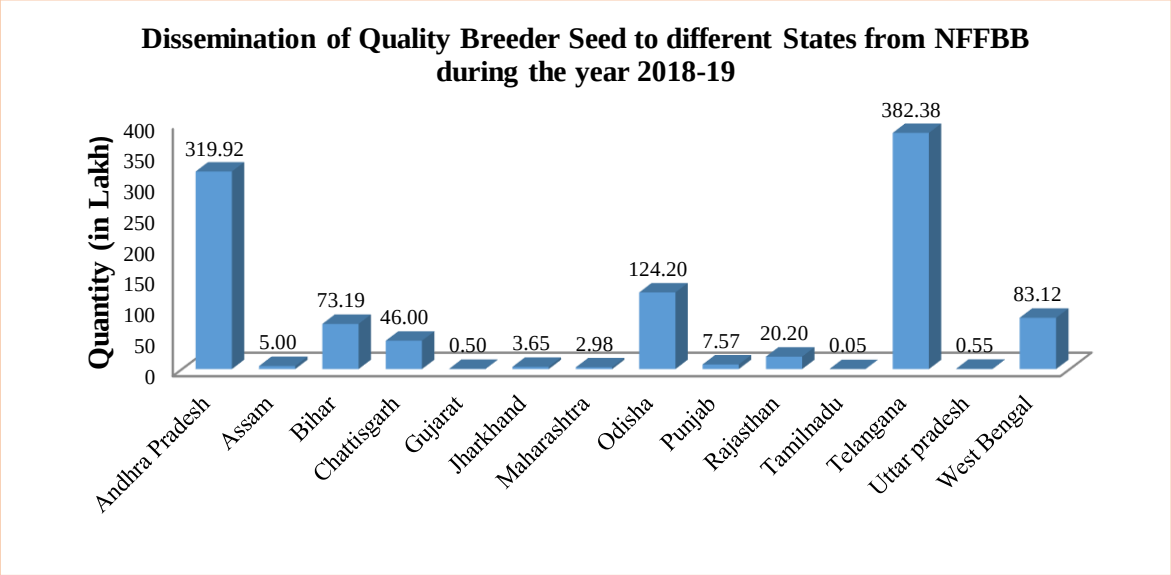



(ii) Creation of Infrastructure for Seed Production & Dissemination

(a) National Freshwater Fish Brood Bank (NFFBB), Kausalyaganga, Odisha: The National Freshwater Fish Brood Bank (NFFBB) of NFDB has 9 brooder ponds and 16 seed rearing ponds spread over 19.96 ha area for breeding and rearing of quality fish seed and disseminate to seed growers through the network of hatcheries, AOCs and KVKs.



Under quality seed program of NFDB, during the year 2018-19, NFFBB entered into MoU with M/s Mallick Hatchery, Purana Sasan, Khurdha, Orissa for production of breeder seed. NFFBB supplied 775.95 lakh of Jayanti Rohu breeder seed, 47.59 lakh of Improved Catla breeder seed, 245.77 lakh of Amur Carp breeder seed and 300 nos of *P. gonionotus* breeder seed to 14 States (Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujurat, Jharkhand, Maharastra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telegana, Uttar Pradesh and West Bengal). NFFBB also distributed about 1328 kg of Broodstock to the network hatcheries.



(b) Construction of Ponds for Fish Seed Rearing: Advanced fish fingerlings of the desired species in required quantity are essential for stocking in grow-out ponds for realizing satisfactory survival, production as well as productivity. To meet the growing demand for advanced fish fingerling in the country, fish seed growers have acquired special significance. NFDB floated EOI for setting up of Fish Seed Rearing Units by construction of new fish seed rearing ponds, conditioning pond, seed packing shed, strengthen pond dikes, pond liners and procurement of accessories like fry/ fingerling collection nets, fish seed packaging accessories like oxygen cylinder, plastic crates and support for input and service as per the BR norms (Maximum of 1 ha per farmer at a unit cost of Rs.7.50). Individual beneficiaries were selected through NFFBB, Bhubaneshwar and NERC, Guwahati after inspection, and authentication and verification. Out of the total 211 EOI received, 175 beneficiaries were selected for the Fish Seed Rearing/Grower Units Programme which is being implementing in West Bengal, Orissa and Mizoram in an area of 161.99 ha.

(c) Establishment of Murrel Hatchery in Manipur: Murrels are important indigenous air-breathing freshwater fish highly preferred for consumption because of its flavour and meaty flesh with less intra-muscular bones. Fairly good growth rate, high consumer preference & market price and their ability to withstand adverse water conditions make them suitable candidate species for

freshwater aquaculture. The demand for snakeheads seedlings is, by and large, met from the wild collections and the commercial culture of Murrel is not common yet due to inadequate availability of seedlings. To meet the demand of the highly priced fish, NFDB sanctioned establishment of 10 nos. of Murrel Hatchery in Manipur during FY 2018-19. The beneficiaries are unemployed educated youths from the four valley district of Manipur. The project is implemented through State Fisheries Department. Details of the project is given below:

Amount Rs. in lakh

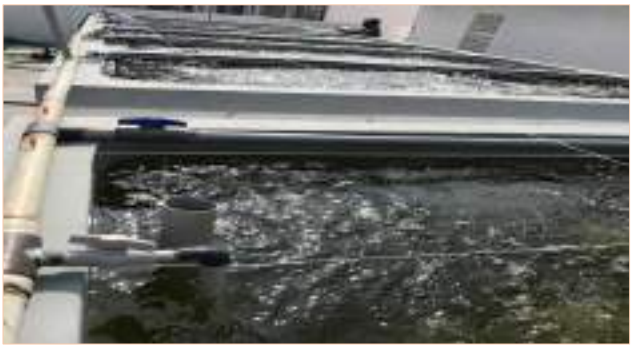
Implementing Agency	Location	Unit (No.)	Sanctioned Amount	Amount Released
DoF, Manipur	Imphal West, Imphal East, Thoubal and Bishnupur	10	32.09	16.04

(d) Broodbank for Marine Fish: Brood stock or brood fish are base materials on which the growth of aquaculture industry depends. The quality and reliable supply of healthy fry and fingerlings having sound genetic base largely depends on the successful stocking and rearing of brood fish. NFDB in collaboration with CMFRI have established Broodbank for high-value marine fish, Cobia and Silver Pompano for ensuring seed supply and enhancing production of these species. The projects were sanctioned during 2017-18 and NFDB have released Rs. 1.28 crores during 2018-19. The details of the projects are as below:

Amount Rs. in lakh

Sl. No.	Project	Amount Sanctioned	Amount Released in 2018-19
1	Enhancing production of farmed Silver Pompano (*Trachinotus blochii*) through the establishment of Brood Bank, supply of larvae to States for seed production	324.11	101.60
2	Enhancing production of Cobia (*Rachycentron canadum*) through the establishment of Brood Bank, supply of larvae to States for seed production	564.4	26.595

(e) Creation of Infrastructure for Production of Marine Finfish Seeds: NFDB, as part of its species diversification programme into aquaculture of high-value marine finfishes, floated an EOI for the establishment of new or renovating the existing facilities into Seed Rearing Centres for the production of fingerling size -fish seed from yolk-sac larvae. Through the EOI, M/s. MSR Aqua Pvt. Ltd, KonapapaPet, Andhra Pradesh have been selected for establishing Seed Rearing Centre to rear yolk-sac larvae of Cobia/Pompano supplied by CMFRI into fingerling-size for dissemination of quality marine finfish seeds to cage/ pond farmers. The total project cost is Rs. 258.62 lakh with central financial assistance of Rs. 103.45 lakh. The seed rearing centre produced 1,06,600 numbers of SilverPompano fingerlings in three phases and supplied to 14 farmers for grow-out culture in ponds.



(f) Demonstration through Krishi Vigyan Kendra (KVKs) and Aqua One Centers (AOCs): NFFBB & its network hatcheries supplied 12.70 crore spawn during 2018-19, out of which, 9.16 crore spawn was of improved varieties i.e. Jayanti Rohu and Amur Common Carp.

In all, 351 registered farmers received seed through 35 KVK and 15 AOCs covering an area of 331 ha in 15 States, namely Andhra Pradesh, Assam, Arunachal Pradesh, Bihar, Gujrat, Maharashtra, Manipur, Punjab, Uttar Pradesh, West Bengal, Rajasthan, Telangana, Odisha, Kerala and Tripura. The total production reported from the demonstration units was 5.4 lakh tonne with higher growth performance when compared to the normal varieties. The details of the project are as below:

Amount Rs. in lakh

Name of IA	Unit cost	No. of Units	No. of States	No. of Farmers	Area (ha)	NFDB Assistance Sanctioned	Amount Released
KVK	1.5	35	15	117	151	128.06	75.11
AOC	1.5	15	3	234	180	1.85	1.85
Total	**3**	**50**	**15**	**351**	**331**	**129.91**	**76.96**

(g) Dissemination of Minor Carp Production Technology: NFDB provided 100% financial assistance to ICAR-CIFA for dissemination of Minor Carp production technology. The project was sanctioned for Rs. 88.6 lakh during 2017-18 for two years and hence was carried forward to 2018-19 with a release of Rs. 57.5 lakh. Farmers were selected from 4 different regions in Odisha and orientation training on scientific fish farming was provided. Two FRP Hatcheries were established at two sites (Baripada and Baliapal) and induced breeding was demonstrated. The seed of Jayanti Rohu, Catla, Pengba, Olive Barb and Java Barb were supplied to the farmers.

(iii) Advanced Technologies

(a) Establishment of Indian Major Carps Cryobank: Cryopreservation of fish milt (sperms) is an important tool for the conservation of biological diversity in fish populations and endangered species, and for efficient and selective breeding and synchronization of artificial reproduction. The technology was initially introduced during 2006 at Freshwater Fisheries Research Centre (FFRC), Malaysia.

During 2018-19, NFDB sanctioned Rs. 129.99 lakh and released Rs. 45.998 lakh for establishing Indian Major Carp milt cryobank at NBFGR, Lucknow, Uttar Pradesh for improving genetic exchange between farms and commercial level quality seed production. This will reduce inbreeding and maintain the quality of seed through use of cryomilt or temporarily preserved milt from selected elite (genetically improved) broodstock. Under the project, training programmes were conducted for 42 hatchery operators and potential brooders of Indian Major Carps were segregated, PIT-tagged, reared separately milt collected and cryopreserved.

(b) Seaweed Spores Production: Seaweeds are macroscopic algae growing in the marine and shallow coastal waters and on rocky shores. Around 844 species of seaweeds have been reported from Indian seas with around 434 species of Red Algae, 194 species of Brown Algae, and 216 species of Green Algae. Seed stock of seaweeds is traditionally collected from sea bed in shallow waters along the south eastern coast of Tamil Nadu. Further, continuous, indiscriminate, and unorganized harvesting has resulted in depletion of natural resources. NFDB in collaboration with CSMCRI have started mass spore production and supply of quality seed material of *Gracilaria edulis* to 10,000 rafts; beneficiaries were identified by the Department of Fisheries, Govt. of Tamil Nadu. Under the project, 2,335 kg of seed material were produced at CSIR-CSMCRI Regional Research Centre, Mandapam. Details of the project are as below:

		Amount Rs. in lakh
Project	**Sanctioned Amount**	**Amount Released in 2018-19**
Mass Culture of spores and supply of plantlets for commercial cultivation of Seaweed (*Gracilaria edulis*) in the coastal area of Ramanathapuram District	92.68	27.80

(c) Production of Quality Fish Feed and Feed Supplements: NFDB funded ICAR-CIFA to scale up Carp Brood Diet "CIFABROOD" for the benefit of hatcheries for early breeding and quality fish seed production. Breeding was done in various hatcheries located in 7 States namely Assam, Bihar, Tripura, West Bengal, Odisha, Tamil Nadu and Chhattisgarh. The spawn production and survival was found comparatively higher in the CIFABROOD™ fed fish. Maturation and breeding of ornamental fish

like *Danio dangila, Devario aequipinnatus* & *Puntius chola* were also observed for the first time through supplementary feeding of CIFABROOD™.

NFDB also provided 50% financial assistance to TNJFU for demonstration of Azolla as feed supplement to GIFT Tilapia. The unit was developed under a shaded area of 35 m² and Azolla cultivated, harvested and used in preparation of GIFT Tilapia feed at various inclusion levels. The feeding trail showed that inclusion of 15% and 30% Azolla in feed gives good growth. Details of the two projects are as follows:

Amount Rs. in lakh

Sl.	Name of the project	Implementing Agency	Sanctioned Amount	Amount released in 2018-19
1	Demonstration of Efficacy of Carp Broodstock Diet CIFABROOD™ in increasing quality seed production of IMC in selected States of India	ICAR-CIFA	115	44.3
2	Technology demonstration unit of Azolla as feed supplement to GIFT Tilapia at Madhavaram	TNJFU	3.01	1.51

II.4. QUALITY MANAGEMENT IN INTENSIVE AQUACULTURE

Introduction: With the shift of fishery sector from capture to culture, the area under culture expanded rapidly and the culture system is also shifting from traditional methods towards more intensive pond, tank and cage-based techniques. This has led to health problems and disease outbreaks. Further, excessive use of antibiotic is also creating problems in the international market. These factors also led to heavy losses to farmers. Fish, being one of the most perishable foods tend to be more susceptible to contamination especially if the initial raw materials are of poor quality despite the technological developments in fish production.

To address these issues, NFDB, through a series of meetings/ workshops/ awareness programmes have sensitized the stakeholders along the Fisheries & Aquaculture Value Chain, namely hatchery operators, seed growers and farmers linked to

freshwater and brackish water farming of fish, shrimp, scampi, mussels, oysters, ornamental fish and seaweed production units (ponds, cages, rafts, etc.), markets and processing plants, about the presence of pathogens/ parasites and various types of harmful antibiotics/ additives/ residues.

NFDB has been implementing Fish Quality Management Network Programme under which regular monitoring and check-up of fish stocks and inputs - seed, feed and water quality parameters are being ensured at the production systems. The programme facilitates minimizing post-harvest losses, increasing revenue, enhancing employment opportunities and offers high standards of hygiene and sanitation leading to safety of fish and fishery products for domestic and international markets.

NFDB Initiatives: Under Fish Quality Management Network Programme, NFDB is implementing the following projects in government and private sector:

(i) National Surveillance Programme on Aquatic Animal Diseases
(ii) Setting up of Aquatic Animal Health Laboratories
(iii) Setting up of Referral Laboratories

(i) National Surveillance Programme on Aquatic Animal Diseases (NSPAAD)

(a) Introduction: To fulfil the international obligations and the spirit of the legislative act for *Prevention and Control of Infectious and Contagious Diseases in Animals*, no. 27, a National Surveillance Programme for Aquatic Animal Diseases (NSPAAD) is being implemented since 2013, and funded by NFDB. The program is coordinated by ICAR-National Bureau of Fish Genetic Resources (NBFGR) and implemented in 20 States of aquaculture and fisheries importance and two Union Territories through 28 National/State Fisheries Research Institutes/Colleges. The project was established through consultation with international experts including Network of Aquaculture Centres in Asia-Pacific (NACA) providing technical advice. The objective is to conduct surveillance of OIE listed aquatic animal diseases of national concern and strengthening of national database on aquatic animal disease.

(b) Technology Provider/Partner: NSPAAD project is being carried out by ICAR-NBFGR, Lucknow. The project cost is as per the cost estimated by the Institute. The Project was approved by 33rd Executive Committee (EC) Meeting of NFDB and approval was accorded under the Annual Action Plan for 2018-19.

(c) Technical Details: NSPAAD Project has extensive coverage of aquatic environment (Freshwater, brackish water, marine and cold water) and animals (finfish, crustaceans and mollusc). The surveillance has been carried out at three levels: (1) Passive Disease Surveillance: farmer reports the disease, and it is recorded and reported, (2) Active Disease surveillance: here 3-5 districts of aquaculture importance in the respective State were selected and in each district 10 farms have been selected for collection of samples. Each farm is visited twice during the crop period for collection of samples and screened for selected pathogens as mentioned below, and (3) Targeted Active Disease surveillance: Implemented through Emergency Teams, when a new pathogen is reported through either passive or active surveillance.

The major pathogens reported during this period in finfish include: Cyprinid Herpesvirus-2, Carp EdemaVirus, Tilapia Lake Virus, *Aphanomyces invadans*, *Saprolegnia parasitica*, *S. ferax*, *S. diclina*, *Aeromonas hydrophila*, *A. veronii*, *A. sobria*, *Edwardsiella tarda*, *Acinetobacter baumannii*, *Photobacterium damselae*, *Pseudomonas fluorescens*, *Citrobacter freundii*, *Klebsiella pneumoniae*, *Myxobolus* spp., *Thelohanellus* spp., *Trichodina* spp. *Argulus* spp., *Lernaea* spp., *Dactylogyrus* spp., *Diplostomum* spp. Major pathogens in shrimps included White Spot Syndrome Virus, Infectious Hypodermal and Haematopoietic Necrosis Virus, Hepatopancreatic Parvovirus, Monodon Baculo Virus, and *Enterocytozoon hepatopenaei*. Major pathogens in molluscs include *Perkinsus olseni* in pearl oyster *Pinctada fucata*, wild green mussel *Perna viridis* and clam, *Paphia malabarica*, *P. beihaiensis* and infection with *Bonamia spp*. in *Crassostrea madrasensis* and *Saccostrea cucullata.*

(d) Project Details:

Amount Rs. in Lakh

Implementing Agency	Sanctioned Amount	Amount released in 2018-19
ICAR-NBFGR, Lucknow	720.14	720.14

(e) Implementing Agency & Collaborating Centres: National Bureau of Fish Genetic Resources (NBFGR) is the Nodal Agency while there are 27 collaborating Centres across the country.

Sl.	Centre Name	Location/State
1	National Bureau of Fish Genetic Resources (NBFGR)	Lucknow, Uttar Pradesh
2	Central Institute of Freshwater Aquaculture (CIFA)	Bhubaneshwar, Odisha
3	Central Institute of Brackish water Aquaculture (CIBA)	Chennai, Tamil Nadu
4	Central Marine Fisheries Research Institute (CMFRI)	Kochi, Kerala
5	Central Inland Fisheries Research Institute (CIFRI)	Barrackpore, West Bengal
6	Central Institute of Fisheries Education (CIFE)	Mumbai, Maharashtra
7	Central Institute of Fisheries Technology (CIFT)	Kochi, Kerala
8	Directorate of Coldwater Fisheries Research (DCFR)	Bhimtal, Uttarakhand
9	National Bureau of Fish Genetic Resources (NBFGR)	Kochi Unit, Kerala
10	Central Island Agricultural Research Institute (CIARI)	Port Blair, A&N
11	ICAR-Regional Research Complex for Eastern Region	Patna, Bihar
12	National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI).	Bengaluru, Karnataka
13	Rajiv Gandhi Centre for Aquaculture (RGCA).	Nagapatinam, Tamil Nadu
14	College of Fisheries (COF)	Raha, Assam
15	College of Fisheries (COF)	Verval, Gujarat
16	College of Fisheries (COF)	Ganderbal, J& K
17	College of Fisheries (COF)	Manglore, Karnataka
18	College of Fisheries (COF)	Kochi, Kerala
19	College of Fisheries (COF)	Ratnagiri, Maharashtra
20	College of Fisheries (COF)	Behrampur, Odisha
21	College of Fisheries (COF)	Tamilnadu
22	College of Fisheries (COF)	Tripura
23	College of Fisheries (COF)	Kolkata, West Bengal
24	C. Abdul Hakeem College	Vellore, Tamil Nadu
25	State Institute of Fisheries Technology (SIFT)	Kakinada, Andhra Pradesh
26	College of fisheries (COF)	Ludhiana, Punjab
27	College of fisheries (COF)	Kawardha, Chhattisgarh
28	College of fisheries (COF)	Wanaparthy, Telangana

(ii) Aquatic Animal Health Labs

(a) Introduction: Aquatic Animal Health Labs aims to provide diagnostic support services to aqua farming community for effective disease diagnosis and pond health management. The AAH Labs will be supporting as focal centres for providing feeding information on disease outbreak to NSPAAD programme. NFDB has sanctioned 18 AAH Labs in 10 States.

(b) Technology Provider/Partner: The project is being carried out through Central and State Fisheries Institutes, State Fisheries Department and NFDB-established AOCs. The project cost was arrived based on the EoI floated and received by NFDB. The Project was approved by 33rd Executive Committee (EC) Meeting of NFDB and approval was accorded under the Annual Action Plan for 2018-19.

(c) Technical Details: Under the project AAH Labs with facilities such as Water Quality Test Instrumentation, Microbiology and PCR Instrumentation, etc are established.

(d) Project Details:

Amount Rs. in lakh

Project	Implementing Agencies	Sanctioned Units	Sanctioned Amount
Aquatic Animal Health Laboratory	14	14	812.02

(e) Implementing Agency:

The project is being implemented by the following:

Sl.	Agency/Firm
1	Amazing Biotech Pvt. Villupuram, Tamil Nadu
2	Microl Remedies, Mythri Nagar, Hyderabad, Telangana
3	For U International Pvt. Ltd, Visakhapatnam, Andhra Pradesh
4	KN Bio Sciences India Pvt. Ltd., Hyderabad, Telangana
5	StampIT Business Solutions, Hyderabad, Telangana
6	Bio-Artis Lab Facility, Hyderabad, Telangana
7	Green Biotech Eco solutions Pvt. Ltd. Imphal, Manipur
8	Matrix Sea Foods India, Secunderabad, Telangana

Sl.	Agency/Firm
9	Sanray Laboratories Pvt Ltd, Hyderabad, Telangana
10	Directorate of Extension Education, Central Agricultural University, Imphal, Manipur
11	Directorate of Research, Dr.Rajendra Prasad Central Agricultural University, Pusa, Samasitpur, Bihar
12	College of Fisheries, Raha, Nagoan, Assam Agri. University, Assam-782103
13	College of Fisheries, Dept. of Aquatic Animal Health and Environment, College of Fisheries, Lembhucherra, Tripura (W).
14	TNJFU Nagapattinam Centre, Tamil Nadu Dr.Jayalalitha Fisheries University, Tamil Nadu

(iii) Aquatic Quarantine Facility at Chennai

(a) Introduction: The Aquatic Quarantine Facility at Chennai, the first of its kind in the country, established in 2009 plays a key role of ensuring the SPF status of imported brood stock of *Litopenaeus vannamei*, which is essential to mitigate the risks involved in continuous importation and ensure sustenance of *L. vannamei* shrimp culture industry in the country. The AQF gradually expanded phase wise over a period of 9 years and now with the facility of 20 Quarantine Cubicles has an annual capacity to accommodate a maximum quantity of 4,12,500 nos. of *L.vannamei* brooders per annum. Consequent to the exponential growth in number of hatcheries and the quantity of brood stock allotted to import, the AQF is experiencing constraints in space allotment to accommodate the imported brood stock by the hatchery operators. In order to meet the growing demand of imported brood stock of *L. vannamei* and the resultant seed requirement by the shrimp farmers, the MPEDA-RGCA, which runs the AQF has proposed expansion of AQF Project facilities at an estimated cost of Rs. 500 lakh.

(b) Technology Provider/Partner: As per the directives of the Ministry, NFDB received project proposal from MPEDA for the establishment of AQF at Chennai for the sustained shrimp sector development in the country. Accordingly, in the 1st phase

an amount of Rs.349.03 lakh was sanctioned for the construction of 4 Cubicles between 2008-09 to 2010-11. Again under 2nd phase, an amount of Rs. 641.31 lakh was sanctioned for the development of 3 Cubicles and 2 Receiving Sections during 2012-13. Further under 3rd phase of expansion , an amount of Rs.1050 lakh was sanctioned for the construction of additional 13 Cubicles during 2015-16 and thus facilitated to accommodate maximum quantity of 4,12,500 nos. of *L. vannamei* brood stock to ensure the production level proportionate to the demand. The project is now in 4th phase of expansion with the construction of 6 additional Cubicles to accommodate the growing demand of imported brood stock.

(c) Technical Details: Construction of 6 Quarantine Cubicles in an area of 1270 m^2 with Blower Shed, Fumigation Shed, Incinerator Shed, ETP Shed (sides covered), inclusive of electrical works, sanitary and plumbing works, aquaculture plumbing, consultancy fees, etc.

(d) Project Details: Total Project Cost of Rs. 500 lakh was sanctioned and released in one instalment in June 2018.

(e) Implementing Agency: Marine Products Export Development Authority (MPEDA), Kochi through Rajiv Gandhi Centre for Aquaculture (RGCA) at Sirkali, Tamil Nadu. With the addition of 6 Quarantine Cubicles and the supporting infrastructure, the AQF will have the cumulative capacity to accommodate 7,33,400 nos. of imported *L. vannamei* brood stock to support the growing demand of *L. vannamei* seed and ensure the sustained development of shrimp aquaculture in the Country.

PART-III

SUSTAINABLE AQUACULTURE DEVELOPMENT

SUSTAINABLE AQUACULTURE DEVELOPMENT

Sustainable development in aquaculture refers to development of aquaculture such that it meets the needs of the present population without compromising the ability of the system to meet needs of future generations. Sustainable practices should integrate social, economic and environmental concerns. Deploying multi-trophic aquaculture system that use filter-feeding fish to perform the rate of artificial filters is a cost-effective way to reduce nutrient accumulation. Such systems can be used for production of diverse species like shellfish, seaweed, rice, etc. along with the targeted species farmed. Use of renewable energy sources like wind-hydro-solar-energy could lead to a positive shift in the image of aquaculture. Introducing seaweed culture in the coastal waters will not only help in providing livelihood to the fishers but also contribute towards ecosystem.

III.1. Seaweed Cultivation

(a) Introduction: India is one of the potential countries in terms of availability of seaweed as well as suitable area for cultivation. Seaweed is considered as one of the priority area for the fisheries sector in India, which can particularly benefit the coastal fisher folk, especially the fisherwomen. Seaweeds are raw material for the agro-based and phycocolloid industries. The natural stocks as such cannot meet the demand of these industries and hence large-scale cultivation is inevitable for upscaling seaweed production in the country.

(b) Technology Provider/Partner: In India, Central Salt Marine Chemical Research Institute (CSMCRI) and Central Marine Fisheries Research Institute (CMFRI) developed culture techniques for some of the commercially important seaweed species and cultivation started in certain coastal districts of the Tamil Nadu. Surveys for seaweed resources was carried out by CSMCRI, CMFRI and other research organizations and revealed vast resources along the coastal belts of South India. Seaweed cultivation on raft is a proven technology that is adaptable and scalable. The

Unit Cost was arrived at in consultations with the Research Institutes. The project was approved in the Annual Action Plan of NFDB for 2017-18 & 2018-19 of the 32nd and 33rd Executive Committee (EC) Meeting of NFDB, respectively.

(c) Technical Details: The projects include culture of *Gracilaria dura* along Simar Coast of Gujarat by 162 farmers in 400 tube-nets/longlines of 25 m length and large-scale cultivation of *G.edulis* and *Kappaphycus alvarezii* along Ramanathapuram coast of Tamil Nadu on 6,800 rafts through 170 SHG (510 women) at 40 rafts/cluster for 3 fisherwomen. The unit cost of the project is Rs. 2,000/raft which includes Rs. 1,500/- for setting up and Rs. 500/- for input cost.

(d) Project Details:

Amount Rs. in lakh

Sl.	Name of the Project	Sanctioned Amount	Amount Released in 2018-19
1	"Farming of red Seaweed *Gracilaria dura* on Gujarat Coast for promoting inclusive economic growth in Coastal rural settings"	201.52	100.76
2	Seaweed cultivation along the coast of Ramanathapuram Dist of Tamil Nadu towards alternative livelihood program to enhance economic condition of marine fisherwomen	81.6 (Rs.36 lakh released in March 2018)	Nil

(e) Implementing Agencies: NFDB in collaboration with CSIR-CSMCRI and Department of Fisheries, Govt. of Tamil Nadu with financial assistance as per CSS-BR guideline. About 111 beneficiaries took up seaweed culture activities on 1483 rafts along the Ramanthapuram coast and nearly 1500 fisherwomen have been trained.

III.2. Development of Wetland through Community Participation

(a) Introduction: India has about 8.0 lakh ha of floodplain wetlands (beels, jheels, mauns, chaurs, pats, etc.) and served as habitat for a large number of small indigenous fish species (SIFS) which support subsistence fisheries and provide livelihood to fisher communities, besides meeting nutritional requirements of the local population. Wetlands of Assam, West Bengal, Bihar, Uttar Pradesh, Odisha, Arunachal Pradesh and Manipur States are amongst the most important from fisheries point of view and account for 7.50 lakh ha of Wetland water spread area (WSA).

(b) Technology Provider/Partner: In India, ICAR-Central Inland Fisheries Research Institute developed the techniques for fish culture in flood plain wetland. The Unit Cost for the project was as per the estimation furnished by the CIFRI and it has an integrated approach with community participation. The project was approved in the 32nd and 33rd Executive Committee (EC) Meeting of NFDB as per the Annual Action Plan for 2017-18 & 2018-19 respectively.

The program was first sanctioned in 2017-18 on a pilot basis to ICAR-CIFRI for development of 4 beels in Bihar State namely Majharia, Kararia, Sirsa and Rulhi in 390 ha. Based on the success, another 4 beels were added in 2018-19 for upscaling the programme: one beel (Kothia of 60 ha area) in Bihar through ICAR-CIFRI, Rupaibali Beel of 92 ha through Assam Fisheries Development Corporation (AFDC) at Nalban, and Goltala beel of 275 ha in West Bengal through State Fisheries Development Corporation.

(c) Technical Details: The projects are implemented in an integrated mode which includes awareness programs and capacity building, renovation of embankments, de-weeding, stock enhancement, fabrication and installation of pen and cage,

construction of a hatchery and rearing ponds near the embankment, provision of craft and gear for fishing, fish transport vehicles with cold chain facilities, etc.

(d) Project Details:

Amount Rs. in Lakh

Implementing Agency	No. of Beels	Area (Ha)	Name of the Beels	No. of Beneficiaries involved	Amount Released in 2018-19
ICAR-CIFRI	4	390	Majharia, Kararia, Sirsa & Rulhi	635	236.8
ICAR-CIFRI	1	60	Kothia	59	26.544
AFDC-Assam	1	92	Rupaibali	51	13.58
SFDC- West Bengal	2	275	Nalban & Goltala	2900	20.68

(e) Implementing Agencies: NFDB in collaboration with ICAR-CIFRI and State Fisheries Development Corporation is implementing the project. The impact of scientific stocking is reflected in the fish production yield during 2018-19 with increase in fish yield by 1.5 to 2.5 times and substantial increase in fishing days, leading to a visible improvement in their livelihood.

III. 3. Ornamental Fish Farming

(a) Introduction: In India, about 80% of the ornamental fish come from freshwaters, but they are mostly exotic species. Among the freshwater fishes, 98% are cultured and only 2% are captured from wild. To encourage captive breeding and rearing, NFDB envisages a cluster approach for the development of ornamental fisheries.

(b) Technology Provider/Partner: In India, ICAR-CIFRI and ICAR-CMFRI developed the scientific techniques for ornamental fish keeping and breeding in freshwater and marine species, respectively. The Unit Cost for the project were arrived based on the "National Consultation" on "Ornamental Fisheries Development" held at NFDB in 2016. The project was approved in the 32nd and 33rd Executive Committee (EC) Meeting of NFDB as per the Annual Action Plan for 2017-18 & 2018-19, respectively.








(c) Technical Details: The projects are an integration of various components such as Backyard (Rs. 3.4 lakh/unit), Medium Scale (Rs. 9.2 lakh/unit), Integrated Units (Rs. 27 lakh/unit), Aquarium Fabrication & Retail Unit (Rs. 4 lakh/unit) and Promotion of Ornamental Fish Keeping in Schools & Public Places (Rs. 0.61 lakh/large unit and Rs. 0.18 lakh/small unit).

(d) Project Details:

Amount Rs. in lakh

State	Amount sanctioned	Amount Released in 2018-19
Chhattisgarh	60.78	42.55
Telangana	0.61	0.61
West Bengal	85.2	59.64
Kerala	82.68	26.87
Tamil Nadu	166.19	83.09

Sl.	Components	AS	BH	MH	KA	KL	TN	WB	CH	Total
A	**Production of Ornamental Fish/ Aquatic Plant Units**									
1	Backyard Rearing Unit(FW)	30	18	25	12	-	15	15	8	123
2	Medium Scale Rearing Unit (FW)	4	5	7	3	-	10	5	2	36
3	Integrated Unit (FW)	2	3	5	2	-	6	1	1	20
4	Ornamental Aquatic Plant unit	2	-	-	-	-	2	-		4
5	Ornamental fish Broodbank unit	1	-	-	-	-	-	-		1
6	Renovation of backyard units	-	-	-	-	80	15	-		95
7	Renovation of Medium Scale units	-	-	-	-		10	-		10
8	Renovation of Integrated units	-	-	-	-	-	6	-		6
B	**Aquarium Fabrication, accessories, Trade & Marketing**									
1	Aquarium fabrication-cum-retail Unit	5	10	11	-	-	12	-	2	40
C	**Promotion of Ornamental Fish activities**									
1	Establishment of Aquariums in Schools/colleges/offices	100	94	75	100	100	75	-	17	561
D	**Capacity Building Programmes on Ornamental Fisheries**									
1	Training Programmes	5	5	4	2	3	5	-	1	25

Abbreviations: AS-Assam, BH-Bihar, KA-Karnataka, KL-Kerala, MH-Maharashtra, TN-Tamil Nadu, WB-West Bengal, CH-Chhattisgarh

(e) Implementing Agency: NFDB in collaboration with State Fisheries Department and KVK is implementing the project. It is currently implemented on pilot basis in 7 States, namely, Assam, Bihar, Karnataka, Kerala, Maharashtra, Tamil Nadu and West Bengal. Additionally, during the year 2018-19, NFDB sanctioned funds for promotion of ornamental fisheries through cluster approach for sustainable livelihood in Chhattisgarh. NFDB extended financial and technical support in developing 19 clusters in 8 States of the country. 350 farmers, most of whom are women have been benefitted out of the scheme and are successfully rearing ornamental fishes.

III. 4. Paddy cum Fish Culture

(a) Introduction: Integrated Paddy-cum-Fish Culture is a system of producing fish in combination with paddy cultivation using the same resources in the same unit area. In India, it has been a traditional practice largely in the North-Eastern Region as an easy, cost-effective, sustainable and environment-friendly method. It can increase paddy yield as a result of nutrients addition and pest control by fish, besides additional income from fish yield. Considering the hilly terrain and problems in construction of new fish ponds on the one hand and the rich paddy fields with perennial water availability on the other, Manipur and Arunachal Pradesh have been selected for implementing the project.

(b) Technology Provider/Partner: Paddy-cum-Fish culture in India originated purely from farmers practice and later scientifically modified by ICAR-Central Inland Fisheries Research Institute. The Unit Cost and components of the projects were arrived at from the pilot project taken up at Ziro, valley, Arunachal Pradesh. Based on the progress of the pilot project, two more projects were launched in Manipur and

Arunachal Pradesh. The project was approved in 33rd Executive Committee (EC) Meeting of NFDB as per the Annual Action Plan of NFDB for 2018-19.

(c) Technical Details: The project is implemented in an integrated mode which includes capacity building, hatchery complex, seed rearing, fish rearing in paddy fields and transport vehicle. The paddy fields were renovated with heightened dykes, and new trenches or centre pond/refuge pond are created.

(d) Project Details:

				Amount Rs. in lakh
Sl.	**Name of the Project**	**Area**	**Sanctioned Amount**	**Amount Released**
1	Paddy-cum-Fish Culture in the integrated model by women self-help group under M/s Gaumco Co-operative Society Ltd., Ziro, Lower Subansiri district, Arunachal Pradesh	12 ha	18.305	3.661
2	Integrated Paddy-cum-Fish Culture for clusters of farmers at Senapati, Manipur	5 ha	14.26	1.988
3	Integrated Paddy-cum-Fish Culture at 15 locations in Arunachal Pradesh	50 ha	29.7	0

(e) Implementing Agencies: NFDB in collaboration with Department of Fisheries, Govt. of Arunachal Pradesh and Manipur is implementing the project. The project was initiated during 2018-19 in 12 ha in Ziro Valley of Arunachal Pradesh with 32 women farmers and in Tungjoy Village of Manipur in 5 ha with 20 farmers on pilot basis. Another 50 ha with 105 farmers were added in Arunachal Pradesh during 2018-19. The project is not only supporting the livelihood and enhancing incomes of farmers but also act as a demonstration to other farmers to take up similar activities.

5. Fish Culture in Community Ponds in Aspirational Districts

(a) Introduction: There are vast numbers of community ponds and tanks across the country which are used for multiple purposes. These ponds also hold huge potential for enhancing fish production if put into proper use. The Govt. of India identified 117 districts from 28 States to develop and improve the socio-economic status of people.

(b) Technology Provider/Partner: Stocking and rearing fish in community ponds and open water bodies was developed by ICAR-Central Inland Fisheries Research Institute. The Unit Cost and components of the projects are in line with the CSS-Blue Revolution guidelines. The project was approved in the 33rd Executive Committee (EC) Meeting of NFDB as per the Annual Action Plan for 2018-19.

(c) Technical Details: The project envisages promotion of fish production using community-based water resources by providing input cost for two consecutive crops @ Rs. 1.5 lakh/ha/crop. NFDB selected 50 aspirational districts and launched a model action plan to take up fisheries development in the potential waterbodies available in these districts on a pilot basis.

(d) Project Details:

Amount Rs. in lakh

Name of the Project	Area (Ha)	Districts covered	Sanctioned Amount	Amount Released
Input assistance for two crops in the community ponds	230.14	40	365.78	69.78

(e) Implementing Agencies: The project is being implemented in the identified Aspirational Districts of all States. The eligible beneficiaries for the project are selected by the State Fisheries department. The project encourages local fishers/ farmers to adopt scientific fish culture methods and thereby enhance production through effective utilization of resources with a sustainable approach.

PART-IV

FISHERIES INFRASTRUCTURE DEVELOPMENT

FISHERIES INFRASTRUCTURE DEVELOPMENT

The Govt. of India envisages creation of fisheries infrastructure facilities both in marine and inland fisheries sectors and augment fish production. Fishing Harbours (FHs) and Fish Landing Centres (FLCs) are the primary centres of fish arrival. As soon as the fish reaches the shore, it under goes handling and passes through, channels of transportation, storage, processing, marketing, etc. Maintaining a clean and continuous cold chain throughout this transition is most essential. Overall, this will reduce post-harvest losses and improve marketability in a hygienic condition. Considering the importance of developing infrastructure in the sector, the Cabinet Committee on Economic Affairs chaired by the Prime Minister Shri Narendra Modi has given its approval in 2018 for the creation of a special 'Fisheries and Aquaculture Infrastructure Development Fund' (FIDF). NFDB is the Nodal Implementing Agency and scrutinise, evaluate and appraise the proposals and placed before CAMC for approval.

IV. 1. Conversion of Trawlers into Deep Sea Fishing Vessels

(a) Introduction: The Palk Bay fishermen of Tamil Nadu fishing with Bottom Trawlers inadvertently or intentionally cross the International Maritime Boundary resulting in frequent skirmishes between them and Sri Lankan fishermen, leading to imprisonment and seizure of their fishing vessels. To overcome this situation, the NFDB launched a scheme to gradually phase out/replace 2000 existing Bottom Trawlers operating in Palk Bay by introducing 18-20 metre and above Deep-Sea Fishing Vessels for 'Tuna Long-lining and Gillnetting'.

(b) Technology Provider/Partner: The project is as per the directives of the Govt. of India for Conversion of Trawlers into Resource Specific Deep Sea Fishing Vessels under the CSS-Blue Revolution Scheme to be implemented in Coastal States and UTs.

It was formulated by NFDB in consultation with CIFT and State Fisheries Department and the Unit Cost of Rs.15 lakh/vessel was arrived at based on the consultations.

(c) Technical Details: The project components consist of (i) modification of deck, (ii) equipping the vessels with navigational tools by shifting of wheel house from the front to back, removal of winch, frame, derrick, gallows, outriggers, etc. Fixing the vessel with line hauler, setter, spooler reel and fish and bait handling equipment, long lines, hooks, floats and radio buoys and improving the fish/ice hold and fresh water storage capacity. The project is proposed to be implement in all the Coastal States and UTs.

(d) Project Details:

			Amount Rs. in Lakh
Name of the project	**Year of Sanction**	**Amount Sanctioned**	**Amount Released**
Purchase of 15 m Wooden Boat for Deep Sea Fishing by Traditional Fisherman.	2018-19	17.76	8.88
Conversion of Trawlers into Resource Specific Deep Sea Fishing Vessels	2018-19	855	427

(e) Implementing Agencies: NFDB is implementing in collaboration with Fisheries Dept. Govt. of Tamil Nadu, Andhra Pradesh and Andaman & Nicobar Island. The committee physically inspected the Bottom Trawlers proposed for conversion, by the Fisheries Dept. Govt. of Andhra Pradesh and recommended 91 Trawlers as fit for conversion of which sanction has been accorded for the conversion of 57 Trawlers berthing based at Kakinada Fishing Harbour, East Godavari district. NFDB nudged the Palk Bay fishermen to shift from Bottom Trawling and trained them in Tuna Long Lining.

IV. 2. Fish Transport Vehicles

(a) Introduction: The domestic fish marketing system in India is mainly carried out by private traders with a large number of intermediaries between producer and consumer, thereby reducing the fisherman's share in consumer's rupee. Some of the problems in fish marketing include high perishability, bulkiness of material, heterogeneity in size and weight of fish species, high cost of storage and transportation, etc. Hence, it is imperative to develop an efficient cold chain and hygienic fish marketing networks by supporting transport of fish in hygienic and fresh condition. The Project was approved by 32nd and 33rd Executive Committee (EC) Meeting of NFDB and approval was accorded under the Annual Action Plan for 2017-18 and 2018-19 respectively.

(b) Technical Details: Project component comprises of Insulated trucks, Motorcycles and bicycles with Ice Box. The Unit cost of the project is as per the CSS-Blue Revolution Guidelines. The project can be implemented in any States for fish transport and retail marketing.

(c) Implementing Agencies: NFDB is implementing the project through the Department of Fisheries, Govt. of Bihar. Thirty two insulated trucks, 800 motorcycles with ice-box, 3200 bicycles with ice box were distributed to members of Fisheries Cooperative Societies of Bihar. and have benefitted 576 members of fisheries co-operative societies with 552 motorcycles with ice-box and 24 pick-up vans.

IV. 3. Cold Chain Development

(a) Introduction: Maintenance of the Cold Chain and careful handling of fish are fundamental to minimize seafood spoilage and losses to producers. The Cold Chain in seafood industry is a temperature controlled chain and begins once the fish is caught. From the quality and regulatory perspective fresh seafood means that which

has been chilled in ice and stored at 8° to 0° C, refrigerated means stored at 15° to -2°C and frozen seafood means stored at –18° C & below (from sea to the consumer). In best practices on seafood handling, minimizing temperature fluctuations are paramount for seafood distributed under refrigeration (i.e., chilled and/or frozen) to maintain its quality and maximize shelf–life.

(b) Technology Provider/Partner: Bay of Bengal Programme (BoBP), Chennai is carrying out the "Development of Business Case for Value Chain Model for Tuna Fisheries in Lakshadweep Island" and "Improvement of Value Chain for Yellow Fin Tuna Fisheries in selected sites along the coast of India: Taking forward Puducherry and Jalaripalem Value Chain Pilots". The project cost are as per the cost estimated and presented in the workshop held at NFDB. The Project was approved by the 32nd and 33rd Executive Committee (EC) Meeting of NFDB and approval was accorded under the Annual Action Plan for 2017-18 and 2018-19 respectively.

(c) Project Details:

		Amount Rs. in Lakh
Name of the project	**Amount Sanctioned**	**Amount Released in 2018-19**
Integrated Cold Chain Development for marketing value added fish products	65.16	65.16
Development of Business Case for Value Chain Model for Tuna Fisheries in Lakshadweep Island	34.38	30.94
Improvement of Value Chain for Yellow Fin Tuna Fisheries in selected sites along the coast of India: Taking forward Puducherry and Jalaripalem Value Chain Pilots	26.5	23.85

(d) Implementing Agency: NFDB in collaboration with BoBP and Dept. of Fisheries, of States & UTs. NFDB sanctioned and released financial assistance to Department of Fisheries, Govt. of Andhra Pradesh. M/s Vijetha Marine Foods, Bheemavaram, West Godavari District, Andhra Pradesh is established Integrated cold chain for marketing value added fish products and commenced its operation. NFDB in collaboration with Bay of Bengal Program (BoBP) initiated study and development of value Chain Model for Tuna Fisheries.

IV.4. Utilising Solar-Wind Energy for Fisheries Sector

(a) Introduction: NFDB is promoting utilisation of renewable energy in various fisheries and aquaculture activities using 'Hybrid Solar Wind Energy Generator'. The solar wind energy generator is a hybrid, modular, scalable, distributed renewable energy system designed and optimized for on-off grid installations at inland, on-shore and off-shore locations. It can be installed to provide alternate source or as the only source of electrical energy for operating any fisheries related Unit located inland or along the coast or on an Island.

(b) Technology Provider/Partner: The technology for harnessing Solar-Wind Energy was developed by Wind Stream Energy Technologies India Pvt Ltd, while National Institute of Rural Development and Panchayati Raj (NIRDPR) is the technology partner. The unit cost is as per the cost estimated by the technology developer based on the components. NFDB in collaboration with NIRDPR and State Fisheries Department for use of this technology in fisheries sector. It is a proven technology that is adaptable and scalable. The Project was approved by 31st and 33rd Executive Committee (EC) Meeting of

NFDB and approval was accorded under the Annual Action Plan for 2017-18 and 2018-19 respectively.

(c) Technical Details: There are Seven types of "Hybrid Solar Wind Mill"units implemented by NFDB as below:

I. Supply and Installation of 2.25 KW Hybrid Solar Wind Mill for Cage Culture Units in Inland Open Waters at an unit cost of Rs. 5.90 lakh

II. Supply and Installation of 800 W Hybrid Solar Wind Mill for Small Marine Fishing Boat (OAL up to 10 m) at an unit cost of Rs. 0.85 lakh

III. Supply and Installation of 4 KW Hybrid Solar Wind Mill for Large Marine Fishing Vessel (OAL up to 20 m) at an unit cost of Rs. 8.20 lakh

IV. Supply and Installation of 40 KW Hybrid Solar Wind Mill Units for Seawater Block-Ice Plant at an unit cost of Rs. 52.80 lakh

V. Supply and Installation of 12.5KW Solar-Wind Renewable Energy System at a Unit Cost of Rs. 28.93 lakh

VI. Supply and Installation of 1400W x 2 Nos. Off grid Hybrid Plants Solar-Wind at a Unit Cost of Rs. 3.99 lakh

VII. Supply and Installation of 20KW Off grid Hybrid Plants Solar-Wind at a Unit Cost of Rs. 27.15 lakh

(d) Project Details

		Amount Rs. in Lakh
Name of the project	**Amount Sanctioned**	**Amount Released**
Instalment of 4KW OFF Grid Hybrid Power Plant for MFV Blue fin _Kavaratti Lakshadweep as a pilot project	8.2	4.1
Supply & installation of 12.5 KW Solar-Wind Renewable Energy system at NFFBB,Bhubaneswar.	28.93	29.27
Supply & installation of 2.20KW Solar-Wind Hybrid power generators in cages at Chandil Dam, Jharkhand	5.91	5.91
Supply and installation of 1400 Wx 2 Nos off grid-hybrid plants for LEDA and diving academy, Kavarati, Lakshadweep	3.99	1.99

Supply and installation of 20 KW off grid-hybrid plant for directorate of fisheries building at Kavarati,	27.15	13.56
Supply and installation of 40 KW off grid-hybrid plant for seawater block ice plant at Kavarati	52.8	26.4
Supply and installation of 800W OFF grid hybrid power Plant for local Fishing boat-Lakshadweep	0.85	0.43

(e) Implementing Agency: The project is implemented through NIRDPR and Dept. of Fisheries of States, Govt. of Jharkhand, Lakshadweep and NFDB-NFFBB. All the units are installed and operational.

PART-V

CREATION OF SKILLED MANPOWER

CREATION OF SKILLED MANPOWER

(a) Introduction: Historically, extension has been the weakest link in the development and modernization of the fisheries sector in India. The availability of technical personnel in the line Department of Fisheries (DoF) in the States/ Union Territories (UTs), to support the vital functions of extension at the grassroots level has been a matter of concern, resulting in poor Transfer of Technology (TOT), lack of coordination with other line Departments and meager research linkages.

The National Fisheries Development Board (NFDB), Department of Fisheries, Govt. of India have laid emphasis on the HRD and extension aspects. The modules for training have been worked out keeping in view the specific needs of different target groups with focus on the job creation and performance requirements. The target groups for training include functionaries of the Department of Fisheries and all Quasi-Govt. Organizations such as Fisheries Corporations/ Federations, besides fishers/ farmers/ entrepreneurs, etc.

(b) Institutional Partners for Skill Development: Keeping in view the broad spectrum of the training needs, a range of Institutions within and outside the fisheries discipline are required to meet the growing skill needs of the sector. The Institutions where the training are presently being conducted include Central Institutes like ICAR-Central Marine Fisheries Research Institute (CMFRI), ICAR-Central Institute of Fisheries Education (CIFE), National Bureau of Fish Genetic Resources (NBFGR), Central Institute of Fisheries Technology (CIFT), Directorate of Cold Water Fisheries Research (DCFR), Central Institute of Freshwater Aquaculture (CIFA), Central Institute of Fisheries, Nautical and Engineering Training (CIFNET), Central Salt and Marine Chemical Research Institute (CSMCRI), Central Inland Fisheries Research Institutions (CIFRI) etc., State Fisheries Departments, Krishi Vigyan Kendras (KVK's), Cochin university of Science and Technology (CUSAT), National Institute of Agricultural Extension Management (MANAGE), Agriculture Skill Council of India (ASCI), Marine Products Exports Development Authority (MPEDA-NETFISH),

National Federation of Fishermen's Cooperatives Limited (FISHCOPFED), DoF-NIFPHATT, DoF-FSI, various State Agricultural and Fisheries Universities presides colleges, KVK, etc.

(c) Project Details: NFDB has funded 423 of Training programs at a cost of Rs.689.07 lakh imparting training to about 23,680 beneficiaries during the F.Y 2018—19. The details of the projects are as given below:

Sl. No.	Category of HRD Programmes	Duration	No. of Programs	No. of Individuals Trained	Amount Released (Rs. In lakhs)
1	Skill Development / Capacity Building	3-5 days	175	12475	211.28
2	Agriculture Skill Council of India (ASCI) Qualification Packs	25 days	12	300	87.27
3	Aqua Clinics & Aquapreneurship Development Programme (AC&ADP)	4-week	10	300	130.50
4	Workshop/Seminar	1-day	139	6480	69.30
5	TOT(Training of Trainers)	5	82	4000	120.00
6	Virtual Learning Approach (VLA)	-	1	-	56.56
7	On-Board Tuna Training	12	5	125	14.16
	TOTAL		**423**	**23680**	**689.07**

V.1. Skill Development Programmes (SKD)

The programmes are designed for 3 days targeting about 50 participants per batch at a cost of Rs. 1.25 lakhs per batch. The various topics which these programmes encapsulate are: Open Sea Cage Culture, Backyard RAS, Cryopreservation, Fish Seed Production, Hatchery Management, Hygienic Handling, and Fish Quality Testing,

Cold Water Fisheries, Inland Cage Culture, Wetland Fisheries Development, Quality Seed Network and Dissemination of seed of Improved Varieties etc.

V.2. Training of Trainers (ToTs)

It is essential to build a cadre of Master Trainers for carrying forward the task of HRD in fisheries sector. Such master trainers would be picked up from the DoF/CoF of the States/ UTs/Fisheries Corporations/ State Agriculture Universities/ KVKs/ NGOs etc. The master trainers will be selected / handpicked through regional assessment by evaluating the criteria like technical background, Training aptitude, communication skills, Team work and leadership qualities, etc. The selection process is being handled by ICAR Fisheries Research Institutions such as CIFT, NBFGR, CIFNET, CSMCRI, CIBA, CIFA, CIFRI, DCFR, and Universities/KVKS, DoF/CoFs and State Level Fisheries Institutes. The ToT Programme is designed for 5 days with 25 participants per batch at a cost of Rs. 2.0 Lakh per batch.

V.3. Long Duration Skill Development Programmes as per ASCI-QPs

Agriculture Skill Council of India (ASCI), National Skill Development Corporation (NSDC), Ministry of Skill Development and Entrepreneurship, Govt. of India have identified several activities of fisheries sector as important skill development activities for employment generation and development of sustainable livelihood in India. The ASCI has listed several fields that are named as "Job Roles" for skill development in the various fields. Further, in order to bring uniformity in skill development trainings at national level, the ASCI have developed Qualification Packs (QP) as "National operational Standards" (NOS) for every identified Job Role. Moreover, these training programmes can only be conducted by those organizations that are registered as "Training Partners"with ASCI and having trainers that are certified by NSDC. The

duration of these programmes is 25 days with 25 targeted participants per batch, and at a cost of Rs. 6.00 lakh and 9.00 lakh per batch. During the year 2018-19, 12 such programs were conducted.

In addition to the above, various other programmes such as Recognition of Prior Learning (RPL), Training-cum-Workshop on Project Preparation & Appraisal, one day training programmes for boat owners on Square Mesh Cod Ends by MPEDA-NETFISH, On board training Tuna Long Lining and Processing by DoF-NIFPHATT, Workshops and Awareness programs etc., are also conducted by NFDB.

V.4. Aqua Clinics & Aquapreneurship Development Programmes (AC&ADP):

Aqua Clinics and Aquapreneurship Development Programmes is a 4 weeks duration training programme undertaken at a cost of Rs. 13.50 lakh per program targeting about 30 participants per batch. NFDB through National Institute of Agricultural Extension Management (MANAGE), Rajendranagar, Hyderabad, a pioneer in the field of Agricultural Extension has envisaged AC&ADP training programmes (on the lines of Agri Clinic & Agripreneurship) for the qualified Fisheries, Aquaculture, Marine Biology and Biological Sciences and Diploma holders in Fisheries and allied sectors.

For carrying out training programmes MANAGE identified Nodal Training Institutes (NTI's) in 17 States of the country having potential in fish farming. AC&ADP training programme structured for four weeks duration has residential classroom sessions and field visits to existing Aqua Clinics during the training periods. After completion of the training programme, MANAGE will provide handholding support to successful trainees to establish an Aqua Clinic or Aqua One Center under NFDB projects, in their respective places of choice.

The trained Aquapreneurs will support fish farmers through Aqua Clinic/ Aqua One Center (AOC) by providing advisory services on fish farming, lab testing of soil, water and disease diagnosis, consultancy, technical guidance and also provide required input such as seed feed, etc. Under AC & ADP training programmes a total of 300 Aquapreneurs were trained during the year 2018-19.

V.5. Virtual Learning, Awareness Workshops & Exposure Visits

NFDB in collaboration with various institutes conducted 130 One-day Workshop/Seminar for 6480 trainees and 12 Five-day training programmes entitled "On-Board Handling of Tuna" for 125 fishermen.

A team of three mid-level officers from NFDB and Dept. of Fisheries, Govt. of Chhattisgarh attended 16 days "International Training on Intensive Fish Farming" at Israel during 4-19 December 2018. A team five officials from NFDB and Dept. of Fisheries, Govt. of Himachal Pradesh, Andaman & Nicobar and Chhattisgarh attended training cum exposure visit on emerging technologies in fisheries at Thailand and Vietnam during 24th February to 2nd March 2019.

PART-VI

EXTENSION SERVICES AND OUTREACH

EXTENSION SERVICES AND OUTREACH

Fisheries and Aquaculture provide food, nutrition, livelihood, employment, recreation, and many more. NFDB facilitates the development of the fisheries sector in line with the technological advancement and adoption by way of promoting new technologies and practices to suit local resources and conditions on a continued basis. Strengthening support systems, institutional arrangements and networking at different levels as supportive and complementary systems are some of the initiatives taken to build a new landscape for significant growth in the sector and integration of aquaculture practices are initiatives taken by NFDB. There is a need to create awareness about: (i) Various technologies available for increasing production and productivity from fisheries and aquaculture, (ii) Nutritional security fish and fish products offer, and (iii) Need to handle fish and fish waste hygienically. To address these issues, the NFDB launched various projects.

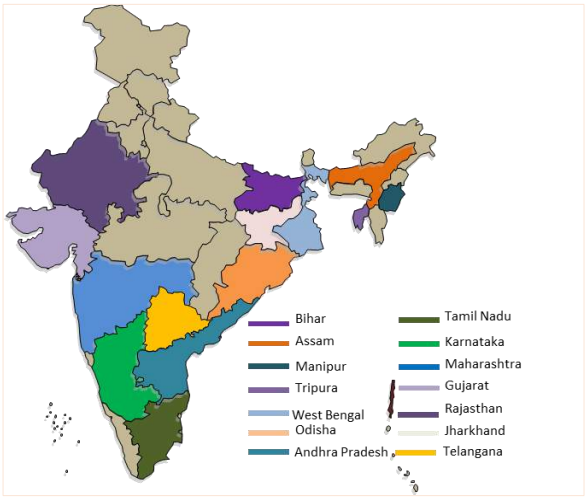
VI.1. Aqua-One Center (AOCs)

(a) Introduction: The Aqua One Center (AOC), an Information & Communication Technology (ICT) enabled Aquaculture Support Service, will disseminate proven technologies and innovations and facilitate their wider adoption by registered fish farmers thereby facilitating the sector's overall growth. In 32nd Executive Committee (EC) meeting of NFDB, approval was accorded for setting up Aqua-One Centers (AOCs) under the Action Plan of NFDB for 2018-19.

(b) Technical details: The selected Beneficiary (Service Provider) will be instrumental in the establishment of AOCs at appropriate location in the fish seed production and fish farming hub. The Service Provider would set up laboratory facilities in the AOC Units located strategically. The AOCs will provide Technologies and Management Practices (BMPs) through ICT advisory services for pond culture, cage culture in reservoirs, culture-based-capture fisheries in wetlands, RAS, Integrated Farming, etc. Broadly the AOC Service Provider has four major tasks which involve: (i) Enrolment and registration of hatchery units, seed growers and fish farmers, (ii) Hatchery-level support for seed production of improved fish varieties, (iii) Installation of ICT enabled advisory service system and (iv) Documentation and Reporting. The AOCs will be managed under the technical guidance of NFDB.

Each AOC unit would provide lab services of primary water quality parameters (Temperature, pH, Dissolved Oxygen, Ammonia, etc.,) and general fish health diagnostics to farmers at affordable costs, and as per schedule throughout the culture period. ICT Enabled Aquaculture Support Services through AOCs are:

- Providing technologies for Fish Culture and Better Management Practices (BMPs) including Inputs management.
- Setting up Disease Diagnostic Labs, Surveillance, etc.
- Management and Advisory services with reference to life cycle of species cultured, water quality, growth, health, disease diagnosis, etc.
- Data management and establishing an e-traceability system.



(c) Criteria for selection of Implementing Agency: The Agency/Firms/Individual Entrepreneur having necessary experience in providing aquaculture support services and Fisheries Professionals, qualified Lab Technicians and Individuals who undergo

the AC&ADP Training and get qualified in EoI process of NFDB are eligible to establish an AOC Unit at any suitable location. A letter of acceptance of RFP was sent to all the shortlisted applicants/firms mentioning the unit cost and submission of agreement.

The following criteria are mandatory for the establishment and operation of AOC Unit:

- **Expression of Interest (EoI):** Applications were invited and shortlisted firms were asked to submit the cost estimation for setup of AOC. Based on the estimated costs received from the firms, average cost was considered.
- The Applicants adhered to the Terms of Reference (ToR) & Memorandum of Understanding (MoU) framed by NFDB.

Request of Proposal (RFP) from Firms: RFP is issued to the shortlisted firms subject to the following criteria;

- Applicant were encouraged to apply for a minimum of 5 units with a maximum of 25 units in a year at suitable locations.
- NFDB evaluated the applications in light of ToR documents.
- Selected Applicants entered in to MoU with NFDB with respect to the provision of services to aqua farmers including those covered under NFDB projects.
- Applicant (except Govt. Agencies) deposited 10% of the project cost as bank guarantee with NFDB as security deposit.
- The fish farmers should be registered with the AOCs before adoption of support services provided by AOC units.

(d) Probable unit Cost: The unit cost of AOC was restricted to Rs 20.00 lakh only. However, the applicant was allowed to include additional components as add-on, but the NFDB support was restricted to the unit cost of Rs 20.00 lakh only. Further, submission of agreement in Rs 200/- stamp paper along with proposal for setting up of AOC with exact location, quotations, and estimates and bank guarantee of 10% of the project cost.

(e) AOCs Established During 2018-19 (Amount Rs. in lakh):

Sl. No.	Implementing Agency	Sanctioned Units (Nos.)	Sanctioned Amount	Amount released
1	Information and Inputs for Sustainable Aquaculture (IIFSA), Andhra Pradesh	5	40.00	23.48
2	StampIT Business Solutions LLP Hyderabad, Telangana	25	300.00	192.27
3	Frontalrain Technologies Pvt. Ltd., Bengaluru, Karnataka	1	8.00	5.30
4	Brihaspathi Technologies Pvt. Ltd,Hyderabad, Telangana	25	300.00	224.32
5	National Federation of Fishermen's Cooperatives Ltd, FISHCOPFED, New Delhi	16	184.00	76.00
6	KN Biosciences	10	72.00	-
7	Vedic Organic	10	72.00	-
8	Salem Microbes	8	64.00	-
9	Spacos Innovations	1	8.00	-
10	Preethi N.D	1	7.20	-
11	Nakul Sadafule	3	36.00	-
12	Manisha R Patil	1	7.20	-
13	REDC	1	8.00	-
14	TAFS	1	16.00	-
15	Dr. Asem Sundari	1	7.20	-
16	I SUPPORT farming	6	79.20	-
17	CoF Raha	1	43.20	-
18	TNFU	3	36.00	-
19	DoF Tamil Nadu	4	16.00	-
20	For U International	2	30.00	-
21	The Bihar State Co-operative Fishers Federation Ltd. (COFFED)	2	40.00	-
22	M/s ASN Raju Aqua Labs	1	16.00	-
23	M/S DITI Solutions Pvt. Ltd	20	20.00	-
24	M/s Rambabu Aqua Lab, Bhimavaram	1	8.00	-
25	Chief Executive Officer National Centre For Sustainable Aquaculture (NaCSA)	10	144.00	-
	Total	**159**	**1562.00**	**521.37**

VI.2. Fish Festivals with Exclusive Cuisine on Fish & Seafood

(a) Introduction: Fish touch our lives in countless ways in terms of providing food, nutrition, livelihood, employment, recreation, and many more. Fish is an excellent source of protein and it provides more than 25% of the world's dietary protein. Human population annually consumes over 100 million metric tonnes (MMT) of fish. Fish and fish products have presently emerged as one of the largest groups in agricultural exports of India with 13.77 lakh tonnes in terms of quantity and Rs. 45,106.89 crore in value (2017-18). However, domestic fish consumption in India is relatively low. There is a need to promote domestic fish consumption across the country as there are several health benefits. This would create adequate demand and spur further production & consumption.

(b) Technical Details: To popularize fish consumption, 'Fish Festivals' are organized at National level and State level in different parts of the country to campaign and create awareness among consumers by exhibiting preparation of different fish menu and showcasing various ready to cook and ready to eat value added fish products. The total area earmarked for organizing the fish festival would be about 2500 m^2. NFDB is also extending the financial assistance to the States/UTs for conducting State level Fish Festival of 1-3 day duration. The unit cost for conducting Fish Festival is Rs.8.98 lakh for 10 cuisine stalls, Rs.17.16 lakh for 20 cuisine stalls and low cost event at Rs.3.50 lakh with 10 stalls. The fish cuisine stalls are set up by renowned private Restaurant/Hotel Chains, Govt. Undertakings, in which different varieties of fish and seafood, ready-to-eat and ready-to-cook, fish/prawn/shellfish items were prepared and served to the visiting public.

(c). Implementing agency: NFDB is organizing 6-day National Fish Festival in different parts of the country and facilitating 3-day State level Fish Festivals by State Fisheries Departments.

Fish Festivals Conducted During 2018-19:

Sl.No	Particulars	Place	Duration
A	**Organized by NFDB**		
1	A 2-day National Fish Festival	YMCA Complex, Visakhapatnam, Andhra Pradesh	9th & 10th July 2018
2	A 6-day Fish Food Festival	Dilli Haat, INA, New Delhi	20th to 25th November, 2018
3	A 3-day Fish Festival	People's Plaza, Necklace Road, Hyderabad	1st to 3rd February, 2019.
4	One-day Fish Festival	Patna, Bihar	21st November, 2018
B	**Organized by States/UTs**		
1	A 5-day Fish Food Festival during Rural Technology and Crafts Mela	NIRD-RTP, Hyderabad	20th to 25th November, 2018
2	A 3-day Fish Festival	West Bengal University of Animal & Fishery Sciences (WBUAFS), Kolkata	22nd to 24th November, 2018
3	A 3-day Fish Festival during "The Shoal"-All India Inter Collegiate Cultural and Sports Meet	Mangalore, Karnataka	13th to 15th December, 2018
4	A 3-day Fish Festival during 3rd AQUABIZ 2018 – International Conference & Exposition	Vijayawada, Andhra Pradesh from	21st to 23rd December, 2018

VI. 3. Aquaculture Technology Park at NFDB

NFDB has taken up multifarious developmental activities which have undoubtedly brought visible positive changes in production, productivity and post-harvest operations of the fishery sector. To accelerate the growth further, the fishery sector needs to adopt new strategies with changing times, situations and context. NFDB has been gearing up itself to implement some key projects directly in emerging and

innovative areas like Cage Culture, Quality Seed Production, Value Chain Development in fisheries, etc. which have good potential. With a view to demonstrate and popularize, NFDB has setup Demo Units like Backyard RAS, Aquaponics, Ornamental Fish Unit and Aqua One Center, on its campus.

(i). Backyard Recirculation Aquaculture System: RAS is used for high-density culture of various species of fish utilising minimum land area and water. In this technology water is recycled and reversed after filtration and removal of suspended matter and metabolites.

The Backyard RAS Unit is established with technical support from National Centre for Aquatic Animal Health (NCAAH), Cochin University of Science and Technology (CUSAT), Kochi, Kerala, in a land area of 100 m^2. The project cost is Rs.7.0 lakh including the input cost of Rs. 1.4 lakh (seed, feed, probiotics & services) per cycle. The unit has three suspended cages with a tricking filtration system with an estimated production of 1.5 - 1.6 tonne per crop. The demonstration unit is used for Tilapia culture and for creating awareness and training to the interested farmers.

(ii) Backyard Aquaponic System: The unit is established with technical support from M/s Spacos Innovations, Chitradurga, Karnataka, in a land area of 150 m^2 for Pangassius culture. The project cost is Rs.6.0 lakh including the input costs of Rs.0.80 lakh per cycle. The Unit has a fish culture tank having a capacity to hold 3000 nos. fish, and supports 10 different grow-beds for planting. Moving Bed Bio-film Reactor (MBBR) Filtration

system and aerators are used in this system. The estimated production from this Unit is 2.20 tonne fish per crop. The demonstration unit is being used for training and awareness to the interested farmers.

(iii) Domestic Aquaponic System: It is a modified RAS combines aquaculture with hydroponics. This system requires 6 sq. ft., land and can easily be kept on roof tops, indoors & backyards. The unit is established with technical support from M/s Spacos Innovations, Chitradurga, Karnataka. The project cost is Rs.15,000/-. The major components of this system are fish tank of 600 l capacity with grow-bed of 350 l capacity with U shaped filtration system. Ornamental fish and other edible fish may be cultured. The demonstration unit is being used for training and awareness to the interested farmers. This will provide low cost business model for women in households.

(iv) Backyard Ornamental Fish Unit: It is established in a land area of 170 m^2 at NFDB for culturing different freshwater ornamental fish. The project cost is Rs.6.123 lakh including the input cost. The Unit comprises of Hapas, Rapid Sand filters, Aerators, etc. Cichilids, Guppies, Koi Carp are being cultured. The Demo-Unit is used for training and awareness to the interested farmers. The sale of ornamental fish is carried out by floating a limited tender.

(v) Aqua One Center: The AOC Unit is established at NFDB with technical support from M/s Brihaspathi Technologies, Hyderabad, Telangana for demonstrating and training purpose. It has a training and lab facility for water quality testing. Daily around 10 farmers visit and get trained at NFDB AOC Unit. The AOC also carries out water quality testing on daily basis and regularly monitors the Demonstration Units. NFDB has been receiving appreciable response and inclination from various fish farmers, trainees and the prospective stakeholders in the sector to adopt these technologies.

VI.4. Aqua Knowledge Park at Moolapalem

NFDB possesses about 97.5 acres of land in Moolapalem village of Sompeta Mandal in Srikakulam district. It is intended to promote, develop post-harvest and entrepreneurship development activities in the area on lease- develop- operate basis. NFDB proposes to develop an Aquaculture Knowledge Park (AKP) for training aquaculture farmers/ entrepreneurs from all over the country using latest technologies by constructing multispecies hatcheries, nursery ponds and rearing ponds along with laboratory etc., and hostel accommodation facilities for farmers/ trainees.

(a) Objectives:

- To Create and modernize the marine, brackish water & freshwater culture fisheries infrastructure.
- To reduce post-harvest losses and improve the domestic marketing facilities through infrastructure support.
- To bridge the resource gap and facilitate completion of ongoing infrastructure projects.

- To increase annual fish production from the present 12.61 million metric tonnes (2017-18) 20.00 million metric tonnes by 2022-23.

(c) Components:

- Gift Tilapia Hatchery, Nursery & Farm
- Scampi Hatchery, Nursery & Farm
- Mud Crab Hatchery Nursery & Farm
- Multi Species Marine Finfish Hatchery, Nursery & Farm
- Multi Species Shrimp Hatchery
- Highly bio secured Raceway with poly house for *P. monodon*
- Processing Plant
- Aquatic Quality Testing Laboratory

(d) Development Status: Expression of Interest (EOI) was called for developing and operating Aqua Knowledge Park (AKP) at Moolapalem and MPEDA-RGCA was selected. The draft MoU for Development and Operation of Aqua Knowledge Park at Moolapalem was prepared and approved by the competent authority.

VI.5. E-Services

(i) File Monitoring System (FMS): Under e-office initiatives of software for File Monitoring System (FMS) was developed wherein the Technical and Admin officers and Staff process inward currents and obtain approvals and sanctions of the Competent Authority, digitally.

(ii) Fish Market and Price Information System (FMPIS): The project on an integrated Fish Market and Price Information System (FMPIS) was sanctioned to ICAR-CMFRI for development of a Web Portal and Mobile App for updating fish prices of various markets across the country.

(iii) *Mera Mastya Dhan* (MMD): The Web Portal and Mobile App of *Mera Mastya Dhan* (MMD) for monitoring and evaluation of Blue Revolution Schemes on a single platform was developed in collaboration with NICSI. State/District Fisheries Officers

were trained on the operation and use of the Portal/App. Beneficiaries can apply and raise query related to BR Schemes.

VI.6. Events:

NFDB organized different events during 2018-19. National Fish Farmers Day, World Fisheries Day were organized and *Swachhata Pakhwada / Abhiyan* was observed. Under Swachhata Abhiyan, NFDB extended financial assistance to the Fish Markets across the country.

(i) National Fish Farmers Day: The National Fish Farmers Day (10th July) was observed by the NFDB; on this occasion an Exhibition and a National Fish Festival were organized on 9th and 10th July 2018 at the YMCA Complex, Beach Road, Visakhapatnam, Andhra Pradesh, which was inaugurated together by the Joint Secretary (Fy), GoI, Commissioner, Fisheries, AP and CE-NFDB. Different State Fisheries Depts., GoI Fisheries Organization, SHG, Private Fisheries Companies and the NFDB showcased their activities, technology, product etc., which attracted a large number of participants/ visitors. On this occasion, 18 awards were given for excellence in fisheries. Awardees were felicitated with a shawl, certificate, citation, memento and cash award.

(ii) World Fisheries Day: Every year 21st November is celebrated all over the world as World Fisheries Day. The celebrations serve to focus on changing the way the world manages global fisheries to ensure sustainable stocks and healthy ecosystems. NFDB has been celebrating World fisheries Day since 2014 and this year, for the first time, World fisheries Day was celebrated at Gyanbhvan, Patna, Bihar. Shri Radha Mohan Singh, Hon'ble Union Minister for Agriculture was the Chief Guest of the event, while Shri Sushil Kumar Modi, Hon'ble Deputy CM of Bihar was the Guests of Honour. The dignitaries

inaugurated the exhibition showcasing the technological advances made and development achieved in Fisheries Sector in the country. Different Publications and CDs on "*Neeli Kranthi*" documentary film were released. On the occasion, Two-Wheelers with Ice-box were distributed to 50 fishers for mobile retail fish marketing.

VI.7. *Swachhata Pakhwada / Abhiyan*:

(a) Under Swachhta Action Plan 2018: NFDB extended financial assistance of Rs.13.74 lakh towards Cleaning 32 NFDB funded Fish Markets in 16 States and organizing three Awareness Camps/Workshops in three States as detailed below:

Sl. No.	State / UT	Fish Market Type, Place and District	Financial Assistance (Rs. in lakh)
1	Andhra Pradesh	Wholesale fish market, Nellore	0.35
2	Kerala	Wholesale fish market, Palluruthy, Ernakulam	0.35
		Retail Fish Market at Mala, Thrissur	0.35
		Total	**0.70**
3	Tamil Nadu	Retail fish market at Santhome, Chennai	0.35
		Retail fish markets at Manjakuppam, Cuddalore	0.35
		Fish Market at Devanampattinam, Cuddalore	0.35
		Fish Market at Panpari, Cuddalore	0.35
		Wholesale Fish Market at Ukkadam, Coimbatore	0.35
		Retail Fish Market at Dharmanagar, Salem	0.35
		Retail fish market at Vadaseri, Nagercoil	0.35
		Total	**2.45**
4	Assam	Fish Market, Sulong, Nagaon	0.56
		Wholesale Fish Market at Fatak Bazar, Silchar,	0.56
		Total	**1.12**
5	Manipur	Wholesale fish market at Moirang, Bishnupur	0.56
6	Sikkim	Retail fish market at Gangtok	0.56
7	Uttar Pradesh	Fish market at Dubagga, Hardoi Road, Lucknow,	0.35
		Retail Fish Market at Hastinapur, Meerut	0.35
		Total	**0.70**
8	Punjab	Wholesale fish market at Ludhiana	0.35
9	Madhya Pradesh	Wholesale fish market at Rewa	0.35
10	Jharkhand	Wholesale fish market at Ranchi	0.35
11	West Bengal	Fish Market, Haldibari, Coochbihar	0.35
		Fish Market, Shantiniketan, Bolpur	0.35

Sl. No.	State / UT	Fish Market Type, Place and District	Financial Assistance (Rs. in lakh)
		Total	**0.70**
12	Maharashtra	Whole sale fish market, Ramtek, Nagpur	0.35
		Whole sale fish market, Ashta, Sangli	0.35
		Whole sale fish market, Kankavali, Sindhudurg	0.35
		Whole sale fish market, Achara, Sindhudurg	0.35
		Whole sale fish market, Malawan, Sindhudurg	0.35
		Whole sale fish market, Ratnagiri, Ratnagiri	0.35
		Total	2.10
13	Chhattisgarh	Wholesale fish market, Bilaspur	0.35
		Wholesale Fish Market at Durg	0.35
		Total	**0.70**
14	Odisha	Retail fish market at Danipali, Sambalpur	0.35
15	NCR, Delhi	Fish market, CR Park, Delhi (FISHCOPFED)	0.70
16	NFDB-NERC, Guwahati	Cleaning of Wholesale fish market, Betkuchi, Guwahati	0.70
17	Tamil Nadu	**State level Workshop** on Hygienic fish handling	0.25
18	West Bengal	**State level Workshop** on Wastewater Aquaculture for farmers of peri-urban area	0.25
19	NFDB-NERC, Guwahati	**State level Workshop** on recycling of Waste through Integrated fish farming for NE States	0.50
		Total	**2.75**
		Grand Total	**13.74**

(b) *Swachhta* Campaign by NFDB: Awareness campaigns, cleaning of Fish Markets at Gudimalkapur Fish Market and NFDB campus Hyderabad and *Swachhta* activity at NFDB Campus were organized under the programme "*Swachhta* of Fish Markets" on 18th -19th June, 2018.

(c) *Swachhata Pakhwada* at East Godavari district, Andhra Pradesh: Under the *Swachhta Pakhwada* Programme, NFDB has selected 4 villages

in East Godavari District, Andhra Pradesh (Aminabad, Danvaipeta, Naiker Peta in Uppada & Yellaya Peta). Door-to-door campaign to drive behaviour change among public with respect to sanitation, street cleaning, drainage cleaning, educating on garbage segregation and effective disposal mechanism was carried out. Cleaning & Repair of drinking water tank, awareness campaign on health hygiene, Do's & Don'ts, plastic-free village and cleaning activities at fish landing centres was carried out during 16th to 18th December, 2018.

VI. 8. Publication & Documentation

During the year 2018-19 the following Documents were Published/E-Published by the NFDB for dissemination of information to Stakeholders:

(i) Guidelines on Schemes & Funding Pattern

(a) Guidelines – Centrally Sponsored Scheme on Blue Revolution: Integrated Development and Management of Fisheries. July 2018 (60-page Handbook in English and Hindi)

(b) Guidelines in Brief - Centrally Sponsored Scheme on Blue Revolution: Integrated Development and Management of Fisheries. July 2018 (8-pp Brochure English & Hindi)

(ii) NFDB *E-Publications*

(a) NFDB E-Bulletin April – May 2018 Issue (8 pages)

(b) NFDB E-Bulletin June – July 2018 Issue (12 pages)

(c) NFDB Committed to Blue Revolution, July 2018 (8 pages)

(d) Blue Revolution – An Overview, July 2018 (8 pages, in Hindi and English)

(iii) Technologies / Package of Practices

"Package of Practices for Breeding and Culture of Commercially Important Freshwater Fish Species". October 2018 (88-page Handbook in English)

(iv) Technical Information Brochure

(a) Aqua-One Center – An ICT Enabled Aquaculture Support Service. July 2018 (2-page NFDB Projects Bulletin, No. 1, English and Hindi)

(b) Farming Silver Pompano in Brackishwater Ponds. September 2018 (6-page Brochure, English)

(c) □□□□ □□□□ □□ □□□□□ □□□ □□□□□□ □□□□□□□□ □□ □□□□. November 2018 (6-page Brochure, Hindi)

(v) National Fish Farmers Day & World Fisheries Day – 2018

(a) National Fish Farmers Day – 10th July 2018 (6-page Brochure in Hindi & English)

(b) World Fisheries Day – 21st November 2018 (6-page Brochure in Hindi & English)

(c) *Neel Kranti* – Documentary Film (DVD Video, Hindi & English)

(vi) Website: Information pertaining to the NFDB Activities, Projects, and all Publications (Newsletters, Guidelines, Books, etc.) are regularly uploaded to the Website: http://www.nfdb.gov.in (English & Hindi).

PART-VII

OUTCOMES

OUTCOMES

(A) NFDB Implemented Projects

I. Introduction

During 2018-19, NFDB under various projects released a sum Rs. 91.07 crore to various implementing agencies. The activity wise release details are given in Annexure-I. Outcomes of each of the projects are detailed below:

II. Promotion of Aquaculture Technologies

Aquaculture Technologies promoted by NFDB have been standardized for up-scaling and adoption in diverse environments such as freshwater, brackishwater and sea water. Fishers/fish farmers/entrepreneurs were nudged, motivated and trained to adopt new and innovative aquaculture technologies. Site inspection is done prior to sanction of the project and authentication of beneficiaries is done in due course by NFDB/ Implementing Agency/ Third Party. Backstopping of beneficiaries by NFDB includes: providing financial assistance, facilitating technical support, equipment sourcing, procurement of inputs, seed stocking, feed management, monitoring growth & health, marketing, economic analysis, monitoring the progress of implementation & evaluation, etc. The comprehensive handholding led to income enhancement of beneficiaries and a general improvement of the local economy.

II.1.Cage Culture:

(i) Inland Cage Culture: For culture in inland open waters such as Reservoirs, Cage Size has been standardized as 6 x 4 x 4 m and Unit Cost as Rs. 3 lakh per cage. Technology for Cage Culture has been standardised and widely adopted by farmers across the country. Site inspection and authentication of farmers/entrepreneurs was done prior to sanction of the project. NFDB extended support in terms of technical handholding and financial assistance. During FY 2018-19, Seventy-two (72) cages were

established at Pawana and Kasarsai Reservoir in Pune district of Maharashtra, and the species cultured were Pangasius and GIFT Tilapia. Progress of the project has been periodically monitored to ensure successful harvest.

(ii) Brackishwater Cage Culture:

Fish culture in brackishwaters, backwaters and estuaries is done in cages measuring 4 x 4 x 3 m as well as 2 x 2 x 1.5 m; Unit Cost has been fixed at Rs. 2.5 lakh per cage. Technology for Cage Culture of selected high-value brackishwater fish has been standardised by ICAR-CMFRI and is promoted by NFDB as an alternate to capture fisheries. Beneficiaries include members of fisherman cooperatives and women SHGs residing in homesteads along backwaters. Site inspection and authentication of beneficiaries was done. Technical handholding, training and financial assistance was provided by NFDB. Progress of the project is periodically monitored to ensure successful harvest.

In Sindhudurg district of Maharashtra 220 farmers from twenty Women Self Help Groups (SHGs) were identified and trained. Eighty Cages have been installed at Mochemad in Vengurla Taluka and Terekhol in Savanthawadi Taluka for culturing Seabass. In Kerala 500 Cages were sanctioned to 46 women beneficiaries living along the backwater areas of Ernakulam and Alappuzha districts, of which 46 Cages were installed; Asian Seabass and Pearlspot were cultured. In Karnataka 500 specially designed 4 x 4 x 3 m Cages were sanctioned to 94 beneficiaries living along the backwater areas of Uttara Kannada and Udupi districts, of which 157 Cages were installed; Asian Seabass, Cobia, Snapper and Pearlspot were cultured successfully.

(iii) Open Sea Cage Culture:

Sea Farming is done in Circular Cages measuring 6 m dia x 4 m depth Unit Cost of which is Rs. 5 lakh. Technology for Sea Cage Culture of high-value sea fish such as Cobia, Silver Pompano, Seabass, Grouper and Snapper has been standardised by ICAR-CMFRI and its wide spread adoption was promoted by NFDB to provide alternative occupation and income to sea-going fishermen besides augmenting marine

fish production. Beneficiaries include members of marine fisherman cooperatives authenticated by State Dept. of Fisheries. Technical handholding, training and financial assistance was provided by NFDB. Progress of the project is periodically monitored to ensure successful harvest.

ICAR-CMFRI was entrusted with installation of 100 Sea Cages in the territorial waters of maritime States. Of this, 20 cages were installed along Palk Bay (Pamban, Munaikadu) and Gulf of Mannar region (Mandapam) and stocked with Cobia and Pompano fingerlings. In addition, TNJFU was sanctioned 100 cages to be installed off the coast of Ramanathapuram district, Tamil Nadu to culture Cobia and Pompano; 220 kg of fish have also been harvested from the cages.

II. 2. Intensive Aquaculture Technologies:

(i) Recirculation Aquaculture System (RAS):

Recirculation Aquaculture is an established technology used for high-density culture of various species of fish under controlled conditions utilizing minimum land area and water. To encourage small-scale fish farmers and entrepreneurs produce and sell fresh/live fish in urban and peri-urban areas, NFDB backstopped adoption of Backyard RAS technology by not only establishing Demo Units and imparting training but also promoting it across the country. The Unit Cost was determined as Rs. 7.0 lakh (inclusive of setup and one-time inputs) and installation was facilitated through Technology Partner and Implementing Agency. Progress of the projects was monitored regularly.

(a) Backyard RAS Demonstration Units: Demonstration Units were established one each at NFDB Campus and NIRDPR Campus at Hyderabad for standardisation of the technology and economic analysis. GIFT strain of Tilapia is cultured and production capacity of each RAS Unit is 1.6 tonne of fish (Tilapia) per cycle.

(b) Backyard RAS Units in Kerala: Forty Backyard RAS Units have been set up for 25 farmers in Kerala during 2018-19. NFDB provided financial assistance while Technical

Support was provided by NCAAH-CUSAT, Kochi. Project sites were inspected and beneficiaries were authenticated by the Project Monitoring Unit (PMU). All the units are established in the household backyards and fish such as Tilapia, Pangasius and Pearlspot are being cultured. Most of the beneficiaries are women and the scheme provided livelihood support and helped generate alternative income.

(c) RAS for Ornamental Farming: An RAS Unit was sanctioned to TNJFU and established in their "Aquatic Rainbow Technology Park". The unit consist of RAS-enabled hatchery, nursery grow out for breeding, rearing and live demonstration of ornamental fishes like Goldfish, Koi Carps, Cichlids, Angel Fish, Barbs and live bearers like Guppy, Molly, Platy, Sword Tail. Nearly 9,000 fishes of different species and variants are cultured in the unit and used for training and demonstration to farmers and students.

(d) RAS for Shrimp Farming: Another unit of RAS that was sanctioned to TNJFU is being used for culture of Pacific White Legged Shrimp *Litopennaeus vannamei*. The unit consist three cemented tanks and is used for demonstration and training to fish farmers, entrepreneurs and students.

(ii) Biofloc Based Eco-Feed Development: Biofloc Technology (BFT) has been standardized and is being widely adopted for shrimp and fish farmers in our country. NFDB is popularising the technology through training besides providing financial and technical assistance to beneficiary farmers. One unit was sanctioned to TNJFU to establish a Raceway Tanks with paddle-wheel aerator, photo-bioreactor, etc., for *ex-situ* production of Biofloc-meal to be used as *L. vannamei* shrimp feed. The unit is used for demonstration and training to the fish farmers, entrepreneurs and students. The progress of the project was periodically monitored.

(iii) Aquaponic System: This farming system is commonly used in resource limited urban areas to raise both fish and vegetable plants in an integrated manner. The technology has been standardized and demo units have been established at NFDB to popularise and promote through technology partners. One unit was sanctioned to TNJFU and established at KVK, Sikkal.








The unit consist of HDPE lined fish tank, vegetable plant grow-beds. GIFT Tilapia is culture in the fish tank while Amaranthus plants are grown in the silica beds. The unit is being used for demonstration and training to the fish farmers, entrepreneurs and students. The progress of the project has been periodically monitored.

II. 3. Promotion of New & Improved Varieties of Fish

Prolonged use of the same brood fish of Indian Major Carps has resulted in inbreeding depression, genetic drift and consequent poor growth and yield. Researchers from ICAR-CIFA and KVAFSU, Karnataka brought forth improved variety of Rohu, Catla and Amur carp that have increased growth rate and disease tolerance when compared to the normal variety. NFDB drew up an Action Plan for "Quality Seed Programme" under which a network of hatcheries and fish seed growers was established for dissemination of seed of improved varieties of Carps, Jayanti Rohu, Amur Common Carp and Improved Catla was disseminated to registered fish farmers.

(i) Establishment of Network of Seed Growers: NFDB established a network of 18 multiplier hatcheries in 4 States having more than 600 million spawn production capacity. The main aim is to replace of one-third of the normal fishwith genetically improved varieties like Jayanti Rohu, Amur Common Carp and Improved Catla in 5 years. This will reduce inbreeding depression arising from use of same parent brooders or breeding within same family which have been the main issues of low survival and poor growth.

(ii) Creation of Infrastructure for Seed Production & Dissemination:

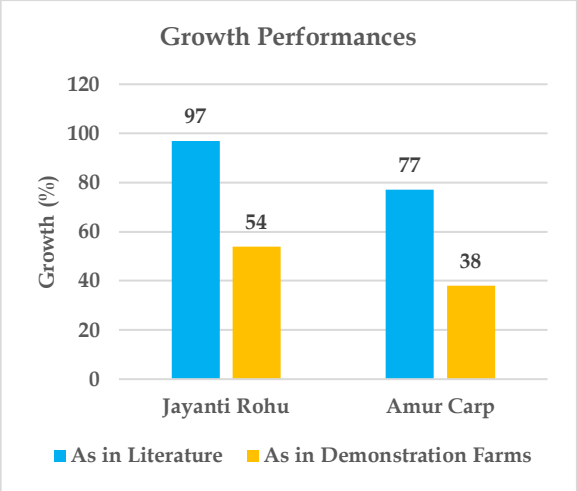
(a) National Freshwater Fish Brood Bank (NFFBB), Kausalyaganga, Odisha: Consequent to the creation of additional infrastructure at NFDB-NFFBB in Bhubaneswar, Odisha, 775.95 lakh of Jayanti Rohu seed, 47.59 lakh of Improved Catla seed, 245.77 lakhs of Amur Carp seed and 300 nos of *P. gonionotus* seed was supplied to 14 States (Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh and

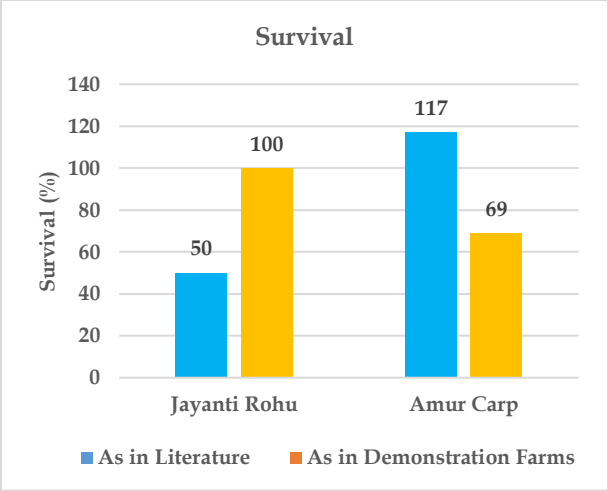
West Bengal). NFFBB also distributed about 1,328 kg of Broodstock to the network hatcheries.

(b) Construction of Ponds for Fish Seed Rearing: 175 Individual beneficiaries were selected through NFFBB, Bhubaneswar and NERC, Guwahati after inspection and verification. The Fish Seed Rearing/Grower Units Programme is being implemented in West Bengal, Orissa and Mizoram in an area of 161.99 ha. Considering an average of 0.25 ha farm area per farmer, the scheme will directly benefit 648 fish farmers and their families.

A comparative analysis was made on the growth performances of the improved varieties supplied to the Demonstration Units, as compared to data on normal varieties from literature. The graphic representation on growth performances of Jayanti Rohu and Amur Carp are as below:

Growth Performances and Survival of Improved Fish Varieties supplied by NFDB





(c) Establishment of Murrel Hatchery at Manipur: NFDB provided financial assistance for establishing a hatchery for the high value Murrel Fish, while Technical Support was provided by Dept. of Fisheries, Govt. of Manipur. This is the first of its kind in the whole of North Eastern States. Out of the sanctioned 10 Murrel Hatcheries in Manipur, four Units were established. Site inspection, verification was done and

progress of the project monitored. Considering that each hatchery will benefit around 5 people (mostly members of the same family), establishment of 4 Units will benefit around 40 person.

(d) Broodbank for Marine Fish: NFDB provided financial assistance to disseminate the technology developed by ICAR-CMFRI. Progress of the project has been monitored periodically. Two Broodbanks were established by CMFRI for Cobia at Mandapam, Tamil Nadu and for Silver Pompano at Vizhinjam, Kerala, and around 3 lakh seed (yolk-sac larvae) were supplied to Network Hatchery for rearing and grow-out. Further, CMFRI have conducted awareness programme to 775 farmers and 47 officials to introduce and popularise Cobia and Silver Pompano breeding and farming.

(e) Creation of Infrastructure for Production of Marine Finfish Seeds: To popularise culture of high-value marine fish, NFDB, through the EoI process, provided financial assistance to M/s MSR Aqua, Kakinada, Andhra Pradesh for creation of infrastructure for rearing and grow-out of marine fish seed. ICAR-CMFRI Centre at Mandapam provided seed of Cobia and Pompano while MPEDA-RGCA at Sirkazhi provided seed of Seabass. The centre is rearing 0.37 lakh Silver Pompano seeds procured from CMFRI-Mandapam and 0.5 lakhs Seabass seeds procured from RGCA Sirkazhi to meet the demands of the local farmers for pond culture. The seed rearing centre produced 1,06,600 numbers of Silver Pompano fingerlings in three phases and supplied to 14 farmers for grow-out culture in ponds.

(f) Demonstration through Krishi Vigyan Kendra (KVKs) and Aqua One Centers (AOCs): NFFBB & its Network Hatcheries supplied 12.70 crore spawn during 2018-19, out of which 9.16 crore spawn was of improved varieties i.e., Jayanti Rohu and Amur Common Carp was supplied to 351 registered farmers through 35 KVKs and 15 AOCs covering an area of 331 ha in 15 States. Around 5.4 lakh tonne with higher growth performance was recorded from the demonstration units when compared to normal varieties.

(g) Dissemination of Minor Carp Production Technology: For diversification of cultivated fish species, NFDB took up promotion and dissemination of Minor Carp production technology standardized by ICAR-CIF. Farmers were selected from four different sites in Odisha and provided orientation-training program on scientific fish farming of Minor Carps. Two FRP Hatcheries were established at Baripada and Baliapal villages, Odisha for demonstrated on induced breeding and production of Minor Carp seed. Seed of Pengba, Olive Barb and Java Barb besides Jayanti Rohu and Improved Catla, were supplied to the farmers.

(iii) Advanced Technologies

(a) Establishment of Indian Major Carps Cryobank: NFDB provided financial assistance to ICAR-NBFGR, Lucknow for standardization of Cryo-banking of fish milt. The progress of the project was monitored periodically. Basic facility for cryo-storage of fish milt was established with Liquid Nitrogen Vapour Phase Storage System, Cold Handling Cabinet, Programmable Freezer, Dry Shippers, 1000 litre Liquid Nitrogen Storage Tank, etc. Two training programmes were conducted for 42 hatchery operators on Fish Milt Cryopreservation for genetic up-gradation of broodstock. The potential brooders of Indian Major Carps were segregated, PIT tagged and reared separately for collection of milt and cryopreserved.

(b) Seaweed Spores Production: The technology on production of *Gracilaria edulis* from spores was developed by CSIR-CSMCRI Regional Research Centre, Mandapam, and successfully implemented under the NFDB funded project which brought about significant changes to the otherwise dormant seaweed (*G. edulis*) cultivation sector and has paved the way for conservation of indigenous seaweed species of South Eastern Coast. Nearly 2.335 tonne of seed material was produced and distributed to the beneficiaries for further cultivation on rafts.

(c) Production of Quality Fish Feed and Feed Supplements: ICAR-CIFA developed some Speciality Fish Feeds such as CIFABROOD™ and Azolla Supplement. Under the NFDB funded project efficacy of these feeds were demonstrated in multi location








trials involving hatcheries. Results indicated early breeding and quality fish seed production. The spawn production and survival was found to be comparatively higher in broodfish fed CIFABROOD™. Maturation and breeding of ornamental fish such as *Danio dangila, Devario aequipinnatus* & *Puntius chola* were also observed for the first time through supplementary feeding of CIFABROOD™. The feeding trail on Azolla as feed supplement to GIFT Tilapia showed that inclusion of 15% and 30% Azolla in feed gives good growth.

II.4. Quality Management in Intensive Aquaculture

(i) National Surveillance Programme on Aquatic Animal Diseases (NSPAAD): Implementation of NSPAAD Project by NFDB has contributed to improved disease diagnosis, improved linkages with State Fisheries Departments and better coordination among research institutes, providing reliable advice to farmers and development of an early warning system. The NSPAAD has been helping in providing scientific inputs to the Department of Fisheries, Government of India on several issues related to aquatic animal health. Around 148 Awareness Programmes/Meetings were organised by NSPAAD Collaborating Centres involving 3,554 stakeholders to inform them about the aquatic animal diseases and management measures for minimizing the incidence of diseases. In addition, 13 Training Programmes were organised involving 470 participants comprising of State Fisheries Officers, Research Scholars and Aquaculture Lab Technicians to enhance the diagnostic capability and to sensitize them with level I, II and III diagnosis. Six OIE (World Organization for Animal Health) listed pathogens were identified from different aquatic environments.

(ii) Aquatic Animal Health Labs: The network of AAH Labs set up by NFDB across the country would provide greater availability of competent analytical and diagnostic laboratory facilities and proficient personnel, allow continuous adherence to standard laboratory practices, uniformity in protocols & and procedures across the laboratory

network, enhance reliability of results and finally allows effective utilization of existing laboratory infrastructures.

(iii) Aquatic Quarantine Facility at Chennai: With the additional 6 Quarantine Cubicles and supporting infrastructure developed with NFDB funding and maintained by MPEDA-RGCA, the AQF at Chennai will have the cumulative capacity to accommodate 7,33,400 nos. of imported *L. vannamei* brood stock to support the growing demand of *L. vannamei* seed and ensure the sustained development of shrimp aquaculture in the Country.

III. SUSTAINABLE AQUACULTURE DEVELOPMENT

III.1. Seaweed Cultivation: The technology for Seaweed Cultivation using rafts has been standardised and adopted by coastal fisher folk, mostly women, for livelihood support and income generation. Site inspection, verification and authentication of beneficiaries were carried out in consultation with Dept. of Fisheries of the respective States. NFDB extended support in terms of technical handholding and financial assistance. During 2018-19, about 111 beneficiaries took up cultivation seaweed *Gracilaria edulis* on 1,483 bamboo rafts along the Ramanthapuram coast of Tamil Nadu and nearly 1,500 fisherwomen have been trained in seaweed farming. Further, 162 beneficiaries have been inducted into cultivation of *G. dura* along the Simar Coast in Gujarat. The project has brought in immense confidence among the coastal fisher folk in seaweed cultivation as an alternate source of income and also contributed to the enhancement of seaweed production which is in great demand for industrial use. The progress of the project has been periodically monitored.

III.2. Development of Wetland through Community Participation: Wetland Development in an integrated mode with community participation has been standardised in consultation with ICAR-CIFRI based on the results of a pilot project. Site inspection, verification and authentication were carried out by ICAR-CIFRI and

respective State Fisheries Dept. Five beels namely Majharia, Kararia, Sirsa, Rulhi and Kothiawere in Bihar State were developed covering 450 ha area involving 694 fishers/farmers who are members of Fishermen Cooperative Society. In West Bengal, Nalban and Goltala beels were developed covering 275 ha area involving 2900 fishers/farmers. In Assam, Rupaibali beel which is the largest beel in the State was developed covering 92 ha area involving 52 fishers/farmers. The impact of scientific stocking is reflected in the fish production during 2018-19 with an increase in fish yield by 1.5 to 2.5 times and substantial jump in fishing days, indicating a substantial improvement in their livelihood and incomes. Further, there has been significant decline in fishers' migration due to enhanced job (fishing) opportunities in the Wetlands.

III.3. Ornamental Fish Farming: Technology for Ornamental Fish Farming has been standardised and widely adopted by farmers across the country for various species. NFDB extended financial and technical support in developing Ornamental Fisheries across 19 Clusters in 8 States of the country. Site inspection was done and beneficiaries were duly authenticated. The project has effectively benefit to the traditional ornamental fish rearing by integrating different units in a cluster mode and has also assisted the beneficiaries in having assured input and output linkages. Further, this activity has been proven a promising alternative livelihood for women and unemployed youth. Nearly 335 farmers have been benefitted out of the scheme and are successfully rearing ornamental fishes.

III. 4. Paddy-Cum-Fish Culture: Paddy-cum-Fish Culture project of 12 ha area was provided to a Women Self Help Group comprising 32 women farmers in Ziro Valley of Arunachal Pradesh on pilot basis. Based on the project results, NFDB have standardised the unit cost and sanctioned another 50 ha at 15 different locations of Arunachal Pradesh and 5 ha for 20 farmers in Manipur. Totally, 67 ha were developed for paddy-cum-fish culture during 2018-19 benefiting 157 farmers directly and indirectly provided livelihood support to the families as the paddy fields are located in poor tribal areas wherein livelihoods are dependent on Agriculture and allied

activities. The project also served as a demonstration for other farmers in the village and the neighbouring villages to take up similar activities.

III. 5. Fish Culture in Community Ponds in Aspirational Districts: Community pond concept encourages the local fish farmers to adopt scientific fish culture methods and thereby enhance production through effective utilization of resources through sustainable approach. Site inspection and beneficiary authentication was done by NFDB in collaboration of State Fisheries Dept. Around 230.14 ha covering 40 aspirational districts were developed for fish culture in community ponds. The project helped to raise fish fry into fingerlings which were partly sold to fish farmers and the remaining used for grow-out in Community Ponds, resulting in substantial increase in fish yield through community participation. It also improved the livelihood of fishers/farmers and generated employment opportunity to the rural folk.

IV. FISHERIES INFRASTRUCTURE DEVELOPMENT

IV. 1. Conversion of Trawlers into Deep Sea Fishing Vessels: During 2018-19, a committee comprising of members from NFDB, FSI and CIFNET has physically inspected the Trawlers proposed for conversion by the Dept. of Fisheries, Govt. of Andhra Pradesh and recommended 57 Trawlers as fit for conversion that are operating from base at Kakinada Fishing Harbour, East Godavari district. The Design has been standardised and Unit Cost fixed as Rs.15 lakh/vessel based on consultation with CIFT and State Fisheries Dept. for implementing in all maritime States.

IV.2. Fish Transport Vehicles: During 2018-19, 576 members of Fisheries Co-operative Societies were provided with 552 motorcycles with ice-box and 24 pick-up vans in East Champaran district, Bihar. This has directly benefited 576 farmers and their families. Facilities of maintaining cold-chain in fish transport for marketing have reported to improve the quality for the consumers.

IV.3. Cold Chain Development: Integrated cold chain development for marketing value added fish products provided to M/s Vijetha Marine Foods, Bheemavaram,

West Godavari District, Andhra Pradesh is established commenced its operation. And for value chain analysis, site identification for scope study is done at Nagapattinam, Vishakhapatnam and Kanyakumari.

IV.4. Utilization of Solar-Wind Energy for Fisheries Sector: Installation of 12.5 kW Hybrid Solar Wind Renewable Energy System for supporting 70 nos. street light of 40 W each completed and commissioned at Chandil Reservoir, Jharkhand. Installed a 2.25 KW hybrid solar wind energy system for light and fan operation at NFFBB. Installation a 800 W off grid Hybrid power plant for local fishing boat, 4 KW Off Grid Hybrid power plant for MFV Blue Fin- Kavaratti, 20 KW off grid-hybrid plant for directorate of fisheries building, Kavaratti, Lakshadweep, 40 KW off grid-hybrid plant for seawater block ice plant and 1400 W X 2 Nos off grid-hybrid plants for LEDA and diving academy at Kavaratti, Lakshadweep

V. CREATION OF SKILLED MANPOWER

Outcomes of the HRD Programmes: Some of the most visible outcomes of NFDB-HRD programmes in fisheries sector are: Knowledge and skill up-gradation at various levels; Improved delivery of extension services; Promotion of fisher groups and their empowerment; Increased market intelligence; Increased appreciation of inter-departmental linkages and coordination; Better management and information system; etc.

Understanding the importance and role of the Skill development in the promoting and uplifting the fisheries sector, NFDB sponsored 423 Training Programmes and sanctioned Rs. 632.51 lakh during 2018-19. Around 23,680 beneficiaries were provided training on various fisheries activities.

VI. EXTENSION SERVICES AND OUTREACH

VI.1. Aqua-One Center for Fish Farmers: During 2018-19, NFDB sanctioned Rs. 1562.00 lakh and released Rs. 521.3737 lakh for establishing 159 AOCs in the country, all of which are established and functioning. ICT based advisory services covering 180 ha were offered, benefitting 1097 registered fish farmers. The farmers were able to get soil & water quality testing done at regular intervals thus bringing scientific approach to culture practices. Through a network of hatcheries & seed growers, AOCs supplied inputs like seed, feed, etc., benefitting fish farmers. Further, disease surveillance is being done regularly to screen notifiable diseases. Documentation of technology and other data is collected more precisely through data management system. Around 870 lakh spawn of Jayanti Rohu & Amur Carp were supplied to farmers and 5.4 lakh tonne of fish produced during 2018-19. The AOCs as well as farmers are getting higher profit by having all the facilities under one roof.

VI.2. Fish Festivals with exclusive Cuisine on Fish & Seafood: During 2018-19, 4 National Fish Festivals were organized by NFDB and 4 fish festivals were organized in collaboration with State Fisheries Departments/ Institutes/ Organizations. These Fish Festivals created awareness among the public on the nutritional and medicinal values of fish in the diet as well as promoted domestic marketing of fish and value added fish products, ensuring remunerative prices to the producers.

VI.3. Aquaculture Technology Park at NFDB: With a view to demonstrate and popularize, NFDB has setup Demo Units like Backyard RAS, Aquaponics, ornamental fish unit and Aqua- One Center, in its campus.The AOC unit carries out the water quality testing on daily basis and regularly monitor of the demonstration units.These demonstration unit is used for training and awareness to the interested farmers/entrepreneurs etc. Daily around 10 farmers/entrepreneurs visits and get trained on NFDB Demonstration units.

VI.4. Aqua Knowledge Park (AKP) at Moolapalem: The 97.5 acres of land in Moolapolam village of Sompeta Mandal in Srikakulam district of Andhra Pradesh, in

the possession of NFDB is being developed into an Aqua Knowledge Park (AKP) for training aquaculture farmers/ entrepreneurs from all over the country using latest technologies by constructing hatcheries, nursery ponds and rearing ponds along with laboratory etc., and hostel accommodation. Expression of interest (EOI) was called for and the MPEDA was selected for developing the AKP.

VI.5. E-Services: As part of the E-Office initiative of NFDB, software for File Monitoring System (FMS) was developed to digitally process Inwards/Currents. A web portal and mobile app on integrated Fish Market and Price Information System (FMPIS) was developed in collaboration with ICAR-CMFRI for live updating of fish prices at various markets across the country. A web portal and mobile app on *Mera Mastya Dhan* was developed in collaboration with NICSI for monitoring and evaluation of Blue Revolution schemes on a single platform; State/District Fisheries Officers were trained on its operation and use.

VI.6. Events: During 2018-19 NFDB organized National Fish Farmers Day at Vishakhapatnam, Andhra Pradesh and World Fisheries Day at Patna, Bihar.

VI.7. Swachhata Pakhwada / Abhiyan: Under *Swachhata Abhiyan*, NFDB extended financial assistance to 16 Fish Markets across the country and towards 3 State-level Workshops. Under the *Swachhta Pakhwada* Programme, NFDB selected 4 villages in East Godavari District, Andhra Pradesh and carried out door-to-door campaign to bring about behavioural changes among people to maintain sanitation, clean streets, drainages and educating them on segregation and proper disposal of garbage.

VI.8. Publication & Documentation: Various documents, viz., Handbooks on Guidelines and Technologies, Brochures, etc., were Published/E-Published by NFDB to create awareness and disseminate information to stakeholders across the country. Publications such as handouts/brochures were given to the visitors at various *Krishi/ Kisan Melas*, Exhibitions, Fisheries Meetings, Seminars, Workshops and Training Programmes organized across the country, and to the State/UT officials visiting

NFDB Office. Soft copies of all the Documents are uploaded to NFDB Website for wider dissemination of information.

(B) SCRUTINY AND MONITORING OF BR-CSS PROJECTS:

As the Technical Arm of the Dept. of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India, during 2018-19, NFDB received a total of 589 projects of which 438 were scrutinised and recommended. CAMC in turn approved 339 projects and funds were sanctioned and released (State-wise details given in Annexure-II).

NFDB also carried out Monitoring & Evaluation of BR Schemes. During 2018-19, NFDB conducted inspection of the 2016-17 launched projects being implemented in 22 States and the reports on the same were furnished to the Ministry. NFDB officers also visited the North Eastern States for monitoring and evaluation of BR 2016-17 projects and reports are furnished to Ministry. In line with it, NFDB also identified 50 backward districts as having potential for development of fisheries by analysing certain indicators relating to agriculture, dairy and fishery in each State.

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ANNEXURE-I

Sl.	Major Project Heads	2405 GEN	SCSP	TSP	NER	Total
1	Project on Cage Culture	1516.51	110.28	79.38	-	1706.17
2	Quality Seed Programme	619.75	16.92	7.70	-	644.38
3	Livelihood Fishery Projects	302.31	4.62	2.39	-	309.31
4	Technology Demonstration Projects	288.97	13.50	7.00	-	309.47
5	Projects for State Specific Needs	37.41	-	-		37.41
6	Innovative	-	-	-	30.37	30.37
7	National Surveillance Programme for AAD	648.13	14.49	57.61	-	720.23
8	HRD Programme - Capacity Building & Awareness	506.27	296.70	68.48	-	871.46
9	Fisheries Development Program in Aspirational Districts	43.19	23.90	2.70	9.00	78.78
10	Setting Up of AQF at RGCA	500.00	-	-	-	500.00
11	Aquatic Animal Health Laboratories	86.29	-	-	-	86.29
12	Low Cost RAS for Fish Culture	200.30	-	-	-	200.30
13	Committed NFDB Projects	2022.16	382.04	144.91	159.86	2708.98
14	Other Projects	859.24	22.89	22.08	-	904.22
	Grand Total	**7630.54**	**885.34**	**392.26**	**199.23**	**9107.36**








ANNEXURE-II

Details of Proposals Scrutinised & Recommended by NFDB under CSS-BR 2018-19						
						Amount in Rs. Lakh
Sl.	State/UT/National Organisation	No. of the Proposed Scheme	No. of DPRs Recommended to DoF	No. of DPRs Approved by CAMC	CAMC Approved TPC	Central share inc. Admin Cost @3%
1	Andaman & Nicobar	12	11	11	798.60	488.93
2	Andhra Pradesh	13	12	8	4485.00	1390.85
3	Arunachal Pradesh	20	15	15	989.00	627.98
4	Assam	9	5	4	1528.00	867.52
5	Bihar	6	6	5	3448.40	959.01
6	Chhattisgarh	25	21	20	6543.50	1985.71
7	Goa	11	9	7	295.75	98.40
8	Gujarat	3	3	3	11173.90	5654.43
9	Haryana	23	16	13	5005.00	1469.28
10	Himachal Pradesh	26	19	18	3148.00	1625.97
11	Jammu & Kashmir	22	21	12	1416.00	1041.43
12	Jharkhand	6	6	5	810.00	411.79
13	Karnataka	61	39	36	6553.50	1872.93
14	Kerala	24	19	17	20554.35	5339.424
15	Madhya Pradesh	15	13	13	3781.50	1066.28
16	Maharashtra	54	35	26	17939.91	5711.20
17	Manipur	13	9	7	1664.00	776.26
18	Meghalaya	12	8	8	9290.00	5197.90
19	Mizoram	20	18	8	810.65	490.05
20	Nagaland	15	14	4	700.00	389.34
21	Odisha	22	21	19	5203.60	1530.97
22	Puducherry	16	13	10	2795.00	1650.17
23	Punjab	6	5	5	9675.00	2645.10
24	Rajasthan	11	8	8	255.83	68.19
25	Sikkim	8	7	6	1120.00	633.04
26	Tamil Nadu	34	13	10	4627.50	1206.85
27	Telangana	15	15	12	13680.00	3749.20
28	Tripura	29	25	11	5691.51	2908.70
29	Uttar Pradesh	18	11	9	5357.50	1652.74
30	Uttarakhand	24	15	11	1418.98	746.95
31	West Bengal	16	6	3	359.80	103.90
32	National Organisation	3	3	3	253.52	253.52
	Grand Total	**589**	**438**	**339**	**151119.78**	**54360.48**








PART-VIII

PHOTO GALLERY

PHOTO GALLERY

I. PROMOTION OF AQUACULTURE TECHNOLOGIES

I. 1. Cage Culture:

(i) Inland Cage Culture

Training on Fabrication of Cages at Sindhudurg District in Maharashtra

Cages Installed in Pawana Reservoir

Cages Installed in Kasarsai Reservoir

(ii) Brackishwater Cage Culture

Open Water Cages installed at Kerala


Open Water Cages installed at Karnataka

(iii) Open Sea Cage Culture

Installation of circular cages at Ramanathapuram Dist.,by TNJFU

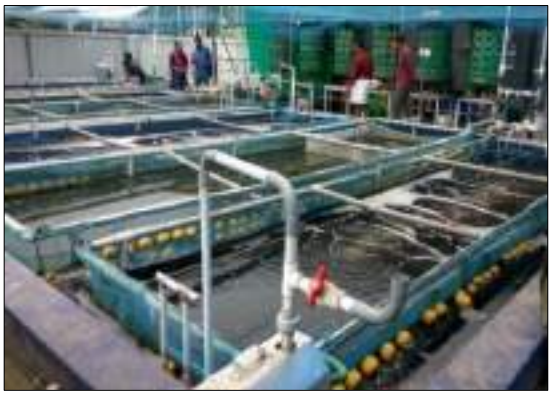
Harvest of Pompano from Cages

Training on Fabrication of Cages by CMFRI

Installation of Cage at Mandapam by CMFRI

I. 2. INTENSIVE AQUACULTURE TECHNOLOGIES

(i) Recirculation Aquaculture System (RAS)



Backyard RAS unit at Kerala

Backyard RAS at NFDB Campus

RAS units for ornamental fish rearing at TNJFU-Madhavaram

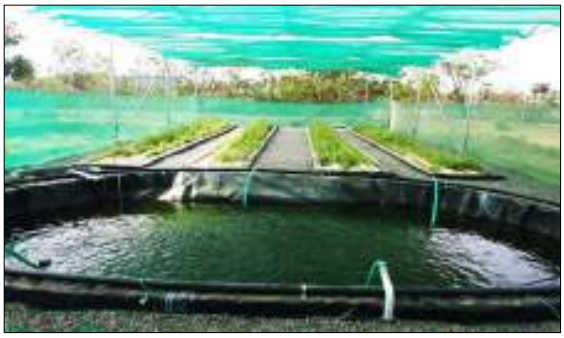
RAS units for shrimp rearing at TNJFU-Madhavaram

(ii) Biofloc based eco-feed development

Biofloc Raceways at Madhavaram, TNJFU

(iii) Aquaponics System

Aquaponics Set up at TNJFU-Madhavaram



Tilapia in Fish Tanks and Amaratha Plants in Silica Bed at TNJFU

I. 3. Promotion of new & improved varieties of seed

(i) Establishment of Network of Seed Growers and distribution of Seed

Breeding Unit of Network Hatchery at Odisha

(ii) Creation of infrastructure for seed production & dissemination

(a) National Freshwater Fish Brood Bank (NFFBB), Kausalyaganga

Clearing of weeds and grasses

Earthwork of bunds at NFFBB pond

Bore-well at the farm

Solar-wind hybrid power plant

Brood-stock selection at NFFBB

Induced breeding of Amur carp

Jayanti Rohu egg collection

M/s Mallick Hatchery, Puransansan, Khurdha


Packing of Jayanti Rohu spawn and transportation from NFFBB

Participants of Skill development training Conducted by NFFBB

Exposure visit organized by NFFBB from 20th 22nd February, 2019

(b) Construction of Ponds for Fish Seed Rearing Units


Inspection of Farms at West Bengal


Orientation Programme on setting up of Fish Seed Rearing /Growers Units at West Bengal

(c) Establishment of Murrel hatchery at Manipur


Cemented tanks for breeding and rearing fry and fingerlings


Earthen ponds for grow-out culture

(d) Broodbank for Marine Fish

Brood Culture Tanks

Algal Culture units

Cobia Brooders

Cobia Seed production

(e) Demonstration through Krishi Vigyan Kendra (KVKs) and Aqua One Center (AOCs)

Fish seed distribution to farmers

Feed distribution to farmers

Fish harvest

Table size Amur common carp

(h) Production of Quality Fish Feed and Feed Supplements

Demonstration of CIFABROOD™ in ponds

Collection of Eggs

Release of Seed at Farms

I.4. (i) National Surveillance Programme on Aquatic Animal Health Diseases

Necrosis of gills diagnosed in Asian seabass

School on Aquatic Animal Epidemiology and Disease Surveillance

II. SUSTAINABLE AQUACULTURE DEVELOPMENT

II.1. Seaweed Cultivation

Seeding of *Kappaphycus alvarezii* in rafts and ropes at the Coast of Ramanathapuram District, Tamil Nadu

Gracilaria duria ready for harvest

Harvested the Seaweed

II. 2. Development of Wetland through Community Participation

Participants during training programme

Participants during the exposure visit

De-weeding the wetlands at Bihar

Stocking of Fish Fingerlings

Harvest of *Pangasianodon hypophthalmus*

Harvest of *Hetropneustes fossilis*

II. 3. Ornamental Fisheries

Group Activities under Ornamental Fish Project

Backyard Ornamental Unit established in West Bengal

II. 4. Paddy-cum-Fish Culture

Paddy-cum-Fish Culture at Tungjoy Village, Manipur

Paddy-cum-Fish Culture at Changlang, Arunachal Pradesh




Paddy-cum-Fish Culture at Ziro valley by Women SHG

II. 5. Fish Culture in Community Ponds in Aspirational Districts


Fish Harvest from Community pond at Chhattisgarh

III. FISHERIES INFRASTRUCTURE DEVELOPMENT

III. 1. Conversion of Trawlers into Deep Sea Fishing Vessel

Bottom Trawler converted into Tuna Long Liner

III. 2. Fish Transport Vehicles

Distribution of 552 Motorcycles with icebox and 24 pick-up vans at Bihar

Handing over of Fish transport vehicles with Icebox at Bihar

III. 3. Cold Chain Development

Cold Chain Facilities and fish processing of M/s Vijetha Marine Foods

III. 4. Harvesting Solar-Wind Energy for Fisheries Sector

Illuminating Cage Culture Units in Chandil Reservoir, Jharkhand

Powering Auxiliary Units on board Fishing Vessel in Lakshadweep

Powering Ice Plant at Lakshadweep

Powering Small Fishing Boats at Lakshadweep

IV. CREATION OF SKILLED MANPOWER

3 day SKD Programme on Preparation and Hygienic Handling of Value added Fishery Products at College of Fisheries, Karwardha, Chhattisgarh

Participants undergoing training on seed production technology of brackishwater species.

Training Programme on Seed Production and farming technology of brackishwater catfish, *Mystus gulio* at CIBA, Tamil Nadu

Demonstration on pre-processing of Shrimp at CIFT

Exposure Visit and Training on Frontier Aquaculture and Processing Technologies at Thailand and Vietnam

International Training on Intensive Fish Farming at Israel

V. Extension Services and Outreach

V.1. Aqua-One Center (AOCs)

Water quality testing at farmer's pond by AOC

Distribution of Improved Fish seed to farmers by AOC

V. 2. Fish Festivals with exclusive Cuisine on Fish & Seafood

Fish Food lovers in the Fish Food Stall

A typical Fish Food Stall at Fish festival

V.3. Events

(i) National Fish Farmers Day

Dignitaries Inaugurating the Exhibition during the National Fish Farmers Day

National Fish Farmers Day Celebrations at Vishakhapatnam

(ii) World Fisheries Day

World Fisheries Day Celebrations – 2018 at Bihar

Dignitaries at Exhibition & Fish Festival

(iii) *Swachhata Pakhwada / Abhiyan*

(a) *Swachhta* Campaign by NFDB

Cleaning Fish Market at Gudimalkapur, Hyderaba


Swachhta activity in NFDB Office Premises

(b) *Swachhata Pakhwada* at East Godavari district, Andhra Pradesh

Swachhta Campaign

Water tank after cleaning and repair

Garbage Disposal

Sanitation Awareness in view of cyclone

V. 4. NFDB Publications (2018-19)

Title-Page of Documents Published/ E-Published during the year 2018-19

Documentary Film on *Neel Kranti*

Homepage of the NFDB Website

PART-IX to XVI

ADMINISTRATION AND FINANCE

IX. MEMBERS OF THE GOVERNING BODY

1.	Minister for Agriculture & Farmers Welfare Government of India, (Ex-Officio)	Chairman
2.	Minister of State for Agriculture & Farmers Welfare In-charge of Department of Fisheries, Government of India, (Ex-Officio)	Vice Chairman
3.	Member (Agriculture), NITI Aayog Government of India, (Ex-Officio)	Member
4 -34	Ministers in-charge of Fisheries of all States and Union Territories	Members
35.	Secretary, Department of Fisheries, Government of India, (Ex-Officio)	Member
36.	Secretary, Department of Agriculture and Cooperation Government of India, (Ex-Officio)	Member
37.	Secretary, Department of Agriculture Research and Education, Government of India, (Ex-Officio)	Member
38.	Secretary, Department of Commerce, Government of India, (Ex-Officio)	Member








39.	Secretary, Ministry of Food Processing Industries, Government of India, (Ex-Officio)	Member
40.	Secretary, Ministry of Panchayati Raj, Government of India, (Ex-Officio)	Member
41.	Chairman, Coastal Aquaculture Authority Chennai, Tamil Nadu (Ex-Officio)	Member
42.	Chairman, NABARD, Mumbai, (Ex-Officio)	Member
43.	Joint Secretary (Fisheries), Department of Fisheries, Government of India, (Ex-Officio)	Member
44.	Chief Executive, NFDB, Hyderabad (Ex-Officio)	Member
45-53	Representatives (to nominate) from groups and associations of fish farmers, Fishing craft operators and exporters	Members

X. MEMBERS OF THE EXECUTIVE COMMITTEE

1.	Secretary, Department of Animal Husbandry, Dairying & Fisheries, Government of India, New Delhi. (Ex-Officio)	Chairman
2.	Financial Advisor & Additional Secretary, Department of Animal Husbandry, Dairying & Fisheries, Government of India, New Delhi. (Ex-Officio)	Member
3.	Advisor (Agriculture), Planning Commission, Government of India, New Delhi. (Ex-Officio)	Member
4.	Joint Secretary (Fisheries), Department of Animal Husbandry, Dairying & Fisheries, Government of India, New Delhi. (Ex-Officio)	Member
5.	Joint Secretary, Ministry of Food Processing Industries, Government of India, New Delhi. (Ex-Officio)	Member
6.	Managing Director, NABARD, Mumbai. (Ex-Officio)	Member
7.	Deputy Director General (Fisheries), ICAR, New Delhi. (Ex-Officio)	Member
8.	Chairman, Marine Products Export Development Authority (MPEDA), Kochi. (Ex-Officio)	Member

9.	Member Secretary, Coastal Aquaculture Authority Chennai. (Ex-Officio)	Member
10-13.	Four Secretaries in charge of Fisheries of State Governments. (Ex-Officio)	Members
14.	Chief Executive, NFDB, Hyderabad (Ex-Officio)	Member-Secretary

XI. CHIEF EXECUTIVE OF THE BOARD

The Chief Executive is the Principal Executive Officer of the Board. The Chairman of the Governing Body of the Board with the previous approval of the Central Government will appoint the Chief Executive with the terms and conditions as specified by the Government. It shall be the duty of the Chief Executive to coordinate and exercise general supervision of overall activities of the Board and accountable to the Governing Body, the Executive Committee and the Central Government. He shall prescribe the duties of all officers and staff of the Board and shall exercise such supervision and disciplinary control as may be necessary in accordance with the rules.

XII. YEAR WISE BUDGET ALLOCATION

Status of funds received as grant from Government of India and utilized from inception of the Board is given below.

Amount Rs. in Lakh

Year	Grants in aids Received	Sanctioned Amount	No. of Projects sanctioned	Projects Completed	Projects Ongoing
2006-07	3000	259.17	18	18	0
2007-08	5000	2,371.23	175	173	2
2008-09	4690	7,891.38	150	148	2
2009-10	10000	11,230.58	147	143	4
2010-11	9230	14,705.80	255	213	42
2011-12	10800	19,545.97	279	228	51
2012-13	10681	18,484.52	268	229	39
2013-14	12416	15,782.78	383	332	51
2014-15	13760	6,873.76	445	365	80
2015-16	14868	3,395.72	192	116	76
2016-17	3239.03	3,902.22	234	75	159
2017-18	1600.52	2,315.57	108	19	89
2018-19	10261.7	8632.21	260	84	176
Total	**109546.25**	**115390.91**	**2914**	**2143**	**771**

XIII. RIGHT TO INFORMATION ACT

In the year 2018-19, NFDB has received 23 numbers of RTI applications via RTI online portal and by Post under the Right to Information act, 2005 for which the information were uploaded in the online portal of RTI and dispatched to the applicant by post. The details are as follows:

Sl. N	Name of the applicant	Address of the applicant	Information sought	Online Regd. No./ Reference No. of RTI application received & Date of receipt.
1	R.Kannaiyan	Orthandu, Thanjavur, Tamil Nadu	Fish Culture Activities	NFDB/RTI/TN/2017-18 Dt.27.03.2018
2	S.Chandra	No.83, Kagallipura, Uttarahalli, Hobli, Bangalore-Karnataka	Submission of proposal for Sanction of subsidy for Pangasius sutchi culture	Inward no.2381, Dt.10.04.2018
3	R.Venkateswaran	Melakkarai, Thiruvarur Dist. Tamil Nadu	Bank Loan with Government subsidy for the unit of Dairy farm – Goat Farm – Fish Farm	Inward no.2509, Dt.16.04.2018
4	V.Naresh	138 , Sundaram Pillai Nagar, 4th Street Tondiarpet, Tamil Nadu	Evaluation and refinement of indigenous automatic feed dispensers for shrimp farming at ICAR-CIBA	NFDBH/R/2018/60002, Dtd.06.02.2018
5	Mantosh Banerjee	Jha Colony Dhansar, Dhanbad, Jharkhand	Amount of subsidy for RAS	NFDBH/R/2018/50001, Dtd.27.03.2018
6	Mr. Rohit	Kapoor Jewelers, WZ 278 A Inderpuri	Furnish information regarding number of candidates called for the written examination for the post of EA (F&A)	NFDBH/R/2018/50002, Dtd.30.04.2018
7	Avinash Prabhu	E-2, A-Bloc, 5th Floor, Jnaneshwari Apartment, V.T.Road,	The species wise fish production, export and consumption data in the country for the 2016-17	NFDBH/R/2018/50003, Dtd.18.05.2018








Sl. N	Name of the applicant	Address of the applicant	Information sought	Online Regd. No./ Reference No. of RTI application received & Date of receipt.
8	Mr Mohammed Malik Rahman	Bokkalguda, Adilabad, Telangana	Request for question paper along with answer sheet and OMR sheet for the post of Executive Assistant (F&A)	NFDBH/R/2018/50004, Dtd.20.06.2018
9	Mr.Krishna Sagar	Addagutta, Opp.JNTU, KPHB, Hyderabad	Schemes & Subsidy pattern for RAS under Central Sector Scheme	NFDBH/R/2018/50007, Dtd.25.07.2018
10	Mr.Mohammed Mazharuddin	Hyderabad	Information about final list of selected candidate towards recruitment of Executive Assistant (F&A) was held on 06.03.2018 at Hyderabad	NFDBH/R/2018/50009, Dtd.05.08.2018
11	Shri Debendra Nath Mallik	Kausalyaganga, Bhubaneswar	Implementation of wages paid to unskilled labour	NFDB Inward No.5206, dt.27.08.2018
12	Mr.Sagar Behera	Odisha	Request for information regarding various schemes & subsidies for fisheries eligible criteria to avail benefits	NFDBH/R/2018/50012
13	Tharuni kavuri	Telangana	Components in BR Scheme, budget and expenditure for the years 2016-17, 2017-18, 2018-19	NFDBH/R/2018/50008 dt.29.07.2018
14	Kannumuri P	Telangana	Benefits of mud crab Aqua culture	NFDBH/R/2018/50011 dt.20.09.2018
15	Vijay kumar	Madhya Pradesh	Details of all Fishing dams in India	NFDBH/R/2018/50010 dt.28.08.2018
16	Shri Madhubabu Kanparthi	Guntur A.P	RAS- Low cost (under Blue Revolution)	NFDBH/R/2018/50013, Dtd.19.11.2018








Sl. N	Name of the applicant	Address of the applicant	Information sought	Online Regd. No./ Reference No. of RTI application received & Date of receipt.
17	Mr. Ishaq Mohammed	Ram nagar, Yousuf Guda, Hyderabad	The subsidies provided for the fish farming in Telangana State	NFDBH/R/2018/50016, Dtd.25.12.2018
18	Ms Thokchom Seiyabhama Devi	D-1, Type, Qtr No.06, Botpp Salkati, BGTPP Township, Salakati	The projects considered under BR Scheme for the Government of Manipur	NFDBH/R/2018/50014 Dt.21.12.2018
19	Shri Ranjeet Kumar	A-9, Rama Park, Metro Pillar No.759, Saini Nursery, Uttam Nagar, New Delhi	Request for Information on establishment of RAS unit	Dt.21.01.2019
20	Shri Utkal Bhusan Behera	Sector :3-455, Niladri Vihar, Sailashree vihar C.S. Pur Bhubaneswar	Request for information on structural Layout Plan/Map for construction of community Hall/Housing for Fisheries with Estimate & Chart on Govt. Land or Private land - Reg	1.Your RTI Application dated.22.01.2019, 2. Letter No.NIC/OSC/RTI/1033/2019 dated 25.01.2019 of the SIO-Cum PIO, NIC Odisha state centre
21	Shri Kanna Vamsikrishna	6-33 Pallepalem Pakala, Singarayakonda, Prakasam	Motorcycle with Ice box under Blue Revolution scheme	NFDBH/R/2019/50001, Dtd.22.02.2019
22	Dr.Rajendra Kumar Sharma	Ex-Consultant (Grade II Hindi)	Requested for Form No.16A	RTI Application dt.12.03.2019
23	Mr.Naresh Kadyan	C-38, Rose Apartment, Prashant Vihar, Sector-14, Rohini, Delhi	Request for information regarding various activities	NFDBH/R/2019/50002 dtd.21.03.2019

XIV. PARLIAMENTARY QUESTIONS (LOK SABHA / RAJYA SABHA)

In the year 2018-19, NFDB submitted draft replied/ answers to DADF for 11 Lok Sabha & 10 Rajya Sabha Questions on Fisheries Developmental Activities undertaken by the NFDB, pertaining to the following aspects:

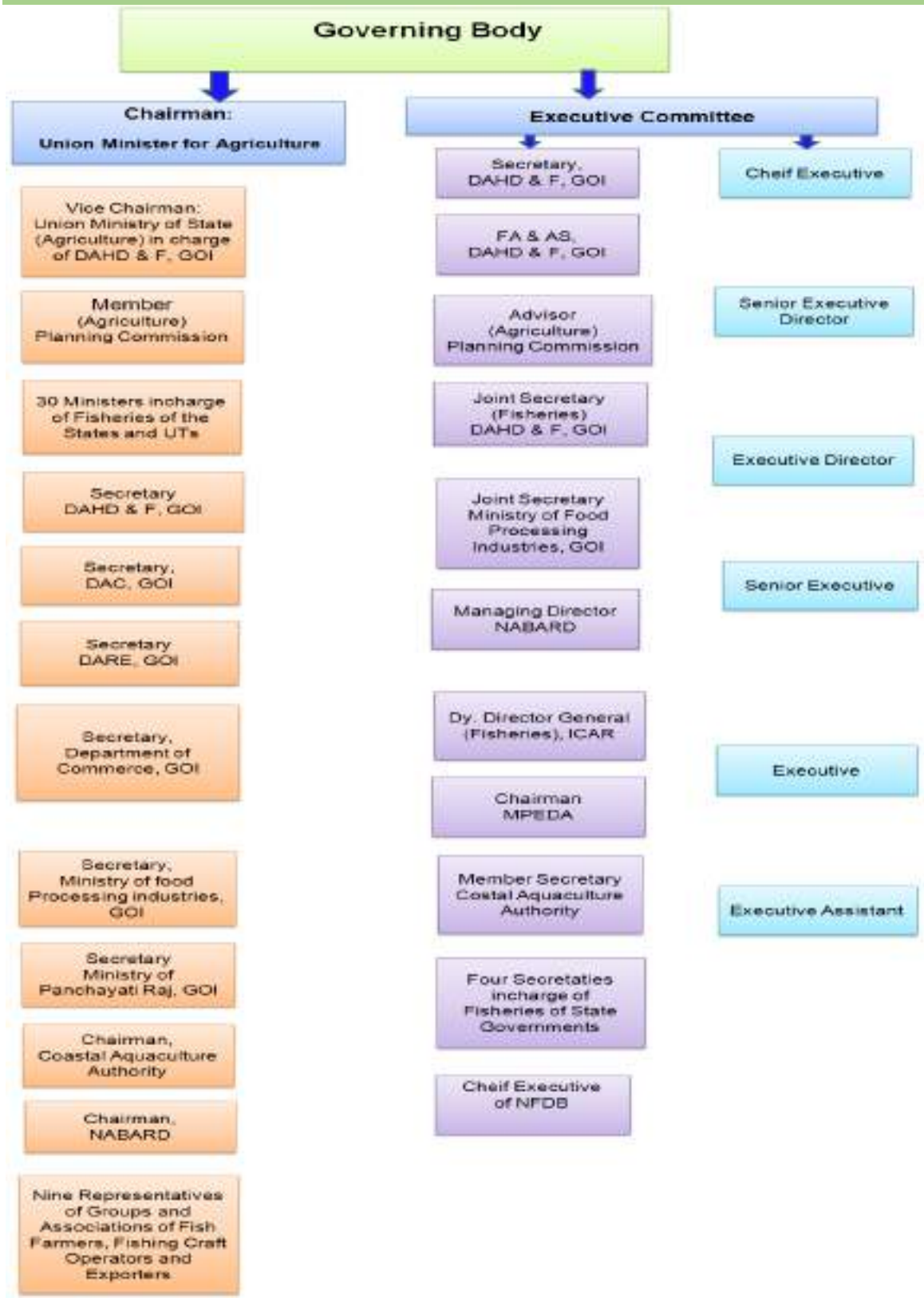
(A) Inputs submitted to DADF on Lok Sabha Questions during 2018-19

1. Trade Centre for Fisheries
2. Development & Renovation of Fishing Harbors in Alappuzha
3. Funding for Fisheries in Madhya Pradesh
4. Brackish Water Aquaculture
5. Infrastructure at Fishing Ports
6. Fish Production and Consumption
7. Setting up of Fishing Harbors
8. Pending Development Project
9. GST on Fishing Equipments
10. Non-Availability of quality seeds for production of Vannamei prawns
11. Plan to set up Fishing Harbor in Coastal Districts of Andhra Pradesh

(B) Inputs submitted to DADF on Rajya Sabha Questions during 2017-18

1. National Animal Disease Reporting System (NADRS)
2. Training to Farmers for Pisciculture
3. Save Fisheries Campaign
4. Assistance to Fisherman
5. Implementation of Blue Revolution Mission
6. Promotion of Aquaponic & Aeroponic Technology in Agriculture
7. Cage Farming in Karnataka
8. Promoting Mariculture
9. Development of Inland Fisheries and Aquaculture in Odisha
10. Appointment of Consultants

XV. ORGANIZATIONAL CHART



XVI. NFDB OFFICERS AND STAFF

S.N.	Name	Designation	From	To
01	Smt. I. Rani Kumudini, IAS	Chief Executive	30.06.2017	Continuing
02	Dr. Bimal Kinkar Chand	Executive Director (T)	05.04.2016	25.03.2019
03	Shri. G. Rathinaraj	Executive Director (T)	30.08.2017	Continuing
04	Shri. G. Srinivas	Executive Director (Admn)	22.10.2018	Continuing
05	Shri. Mokaswamy Kumar	Executive Director (T)	28.03.2018	30.11.2018
06	Smt. A. Dhanalakshmi	Executive Director (Admn)	04.09.2017	23.09.2019
07	Dr. Manne Persis	Senior Executive (T)	01.07.2014	30.06.2019
08	Shri. Apurba Kumar Das	Senior Executive (T)	11.03.2016	05.04.2018
09	Shri. Vishwanatha T.S.	Senior Executive (T)	01.09.2017	30.09.2019
10	Shri. C.V.Ramana Murthy	Senior Executive (Infra)	07.09.2017	Continuing
11	Smt. R.S. Rajya Lakshmi	Senior Executive (T)	15.03.2018	Continuing
12	Dr Manas Kumar Sinha	Senior Executive (T)	11.10.2017	Continuing
13	Dr S. Prashanthi	Senior Executive (T)	08.03.2018	Continuing
14	Smt. S. Padmaja	Senior Executive (F&A)	14.03.2018	Continuing
15	Shri. G. Ramakrishna Rao	Senior Executive (T)	12.04.2018	Continuing
16	Smt. Dipmala Roy	Senior Executive (T)	13.08.2018	Continuing
17	Shri. M.J. Rajkumar	Senior Executive (T)	19.09.2018	18.09.2019
18	Shri. E. Praveen	Executive (A&F)	16.03.2018	Continuing
19	Smt. V. Ramya Anoosha	Executive (A&F)	08.03.2018	Continuing
20	Smt. J. Deepa Suman	Executive (T)	31.07.2008	Continuing








S.N.	Smt. A.V. Madhuri	Executive (T)	04.07.2008	Continuing
21	Shri. Amit Bhardwaj	Executive (T)	23.07.2008	Continuing
22	Shri. Ashim Kumar Borah	Executive Assistant (T)	14.07.2008	Continuing
23	Smt. Smiti Rekha Pati	Executive Assistant (T)	12.03.2010	Continuing
24	Ms. K. Bhargavi	Executive Assistant (T)	19.11.2010	Continuing
25	Shri. A. Mallikharjun	Executive Assistant (F&A)	03.05.2016	Continuing
26	Shri. Vipin Nautiyal	Executive Assistant (T)	18.05.2016	Continuing
27	Smt. Sreerenju Hariharan	Executive Assistant (T)	01.08.2016	Continuing
28	Ms. Dorothy, M.S.	Executive Assistant (T)	12.09.2016	Continuing
29	Shri. Kapil Parate	Executive Assistant (F&A)	02.07.2018	Continuing
30	Shri. Dipin, K. M.	Executive Assistant (T)	16.08.2018	Continuing
31	Smt. Seethalakshmi, S.	Executive Assistant (T)	17.08.2018	Continuing

KOMANDOOR & CO. LLP
Chartered Accountants

GGI INDEPENDENT MEMBER | A GLOBAL ALLIANCE OF INDEPENDENT PROFESSIONAL FIRMS

INDEPENDENT AUDITORS REPORT

To
The Members,
Governing Body
National Fisheries Development Board
HYDERABAD

OPINION

We have audited the accompanying Financial Statements **of NATIONAL FISHERIES DEVELOPMENT BOARD** (The Board) , which comprise the Balance Sheet as on March 31st, 2019, the Income and Expenditure Account and Receipts and Payments Accounts for the year then ended, and a summary of significant Accounting Policies and the other explanatory information.

In our opinion and to the best our information and according to the explanations given to us, the financial statements given to us, the financial statements give a true and fair view in conformity with the accounting principles generally accepted in India along with the matter mentioned in annexure-A attached to the independent auditor's report.

a) In the case of Balance sheet, of the state of affairs of the board as at March 31st, 2019 and
b) In the case of income and Expenditure Account, of the Excess of Income over Expenditure for the year ended on that date.
c) In case of Receipts and Payments Account, receipts and payments for the year ended 31-03-2019.

A partnership firm converted into Komandoor & Co. LLP (A limited liability partnership with LLP Identification No. AAG-3843) with effect from 21st March, 2016
I-504, Divya Shakti Complex, 7-1-58, Dharamkaran Road, Ameerpet, Hyderabad-500 016. Telangana, INDIA
Phone : +91 40-23751300 / 23748400, Cell : +91 9849011300, +91 7207057799. Fax : +91 40 23745381
E-mail : komandoorco@gmail.com info@komandoorco.com URL : www.komandoorco.com
BRANCHES: NEW DELHI, MUMBAI, KOLKATA, CHENNAI, BANGALORE, AHMEDABAD, BHUBANESHWAR, AGRA, KARIMNAGAR, VISAKHAPATNAM, WARANGAL AND TIRUPATI

GGi INDEPENDENT MEMBER

KOMANDOOR & CO. LLP
Chartered Accountants

BASIS FOR OPINION

We conducted our audit in accordance with the Standards on Auditing (SAs). Our responsibilities under those Standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the entity (NFDB) in accordance with the Ethical requirements that are relevant to our audit of the financial statements and we have fulfilled our other responsibilities in accordance with these requirements and the Code of Ethics. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

MANAGEMENT'S RESPONSIBILITY FOR THE FINANCIAL STATEMENTS

Management is responsible for these Financial Statements that give a True and Fair view of financial position, financial performance and cash flow of board in accordance with the applicable accounting standards as prescribed by Institute of Chartered Accountants of India and generally accepted accounting principles in India. This responsibility includes the design, implementation and maintenance of Internal Control relevant to presentation of the financial statements that give a true and fair view of and are free from material misstatements due to fraud or error.

AUDITOR 'S RESPONSIBILITY

Our responsibility is to express an opinion on the financial statements based on our audit. We have conducted our audit in accordance with Standards on Auditing issued by Institute of Chartered Accountants of India. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

GGi INDEPENDENT MEMBER

KOMANDOOR & CO. LLP
Chartered Accountants

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend upon the auditor's judgement, including the assessment of risks of material misstatement of financial Statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to board's preparation and fair presentation of financial statements in order to design audit procedures that are appropriate in the circumstances.

An audit also includes evaluating the appropriateness of accounting policies used and reasonableness of Accounting estimates made by Management, as well as evaluating the overall presentation of the financial statements. We believe that the audit evidence obtained is sufficient and appropriate to provide a basis of our audit opinion.

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

We report as under:

I. We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit.

II. In our opinion proper Books of Accounts as required by law have been kept by the Board so far as appears from our examination of those books.

III. The Balance sheet, Receipts and Payments Account and Income and Expenditure Account dealt with by this report is in agreement with the books of accounts.

For KOMANDOOR & CO., LLP.
Chartered Accountants

K. MOHAN ACHARYA
Partner
M.No.019082
FRN No.001420S/S200011

KOMANDOOR & CO. LLP REG. No. 001420S/S200011 HYDERABAD CHARTERED ACCOUNTANTS

UDIN:19029082AAAAEQ3237
Place: Hyderabad
Date:30-10-2019.

GGi
INDEPENDENT MEMBER

KOMANDOOR & CO. LLP
Chartered Accountants

EMPHASIS OF MATTER

01. Change in Accounting policy from that of Financial Year 2018-19, effecting treatment of Grant-in-Aid received and released to various projects to various States.

02. An amount of Rs. 1,30,92,12,211/- was pending for confirmation as on 31.03.2018 towards Advances given to various states for various projects, out of which
    a) Utilisation certificates received for Rs.67,32,24,981/- and
    b) Refund received from various states of Rs.5,71,74,716/- and
    c) Rs.18,67,04,330/- adjusted through book entry by reducing opening balances and
    d) Rs.39,21,08,184 booked as expenditure for which no utilisation certificates were received.

03. In order to adjust Bank balances without any incremental data, an amount of Rs. 1,04,95,60,808 was received against Grant-in-Aid and advances, the adjustment was not scientifically done, but by reversing, scheme-wise interest earned on FD was credited to Grant-in-Aid accounts.

04. Major Bank Account transactions were missed out and adjusted with year end JV. (A/C No #33708404643 of SBI GUWAHATI, A/C No #32607018978 of SBI BHUBANESHWAR)

05. Accounts have been Outsourced to an outside agency who has no thorough knowledge on the nature of activity and objectives of NFDB. Management should have appointed a in house fulltime accountant.

GGi INDEPENDENT MEMBER

KOMANDOOR & CO. LLP
Chartered Accountants

06. Government grant should be accounted for as per the IGAS (2) norms.

07. NFDB proposed change in accounting as per Income Tax section 12(A) to meet requirements of Income tax instead of IGAS (2) recommendations.

08. Final copy of prior approval from appropriate authority was not made available and treatment of Accounting was changed during Financial year 2018-19.

09. The Board has compiled the fixed assets register in respect of assets purchased/constructed showing full particulars, including quantitative details and situation of fixed assets. Last third-party physical verification of fixed assets has been carried out on 31-03-2016. **No Physical verification has been conducted afterwards either by management or through outsourcing agencies.**

10. Annexure-1 of Schedule 8B(S.no 04) includes the amount of Rs.4,79,969/- showing under the head of "Advance for land acquisition". It pertains to the amount kept at the disposal by Revenue divisional officer, Tekkalivia letter no Rc.no 315/2011 dated 15.02.2015.

11. Refer Annexure-1 of Schedule 8B (S.no 06) amount of Rs. 21,71,062/-lying under the head of "Advance to CESUBED Bhubaneshwar". Out of this amount of Rs.12,40,553/- has been paid to officer incharge of NFFBB Bhubaneshwar via sanction order no 3144/NFDB/NFFBB/Power supply/2011-12 dated 21-05-2013.We suggest Board to take up this matter as it is pending since long.

GGi INDEPENDENT MEMBER

KOMANDOOR & CO. LLP
Chartered Accountants

12. Advance to NFFBB Kausalyaganga Bhubaneshwar amounting to Rs.2,52,26,791/- has been paid on below dates A)NFFBB, Bhubaneshwar t/w construction of watch towers and packing shed and conditioning tank at NFFBB, Odisha.S.no-3144/NFDB/NFFBB/Pond renovation (part-II)/2011-12 paid on 25.8.16 amounting to Rs.42,42,966/- B)DOF, Odisha t/w laying of Internal roads in NFFBB Bhubaneshwar, work to be executed by CPWD paid on February-2013 and September-2016 amounting to Rs.59,83,825/- & Rs. 1,50,00,000/- respectively.

Out of which Rs.1,96,65,636/- has been reduced by Capitalising the fixed assets, which resulted the Balance of Advance to NFFBB Kausalyaganga Bhubaneshwar as at 31-03-2019 is Rs.55,61,155/- to be capitalised or reconciled.

For KOMANDOOR & CO., LLP,
Chartered Accountants

K. MOHANACHARYA
Partner
M.No.029082
FRN No.001420S/S200034

UDIN:19029082AAAAEQ3237
Place: Hyderabad
Date:30-10-2019

KOMANDOOR & CO., LLP REG. No. 001420S/S200034 HYDERABAD CHARTERED ACCOUNTANTS

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Balance Sheet As At 31.03.2019

CORPUS/CAPITAL FUND AND LIABILITIES	Schedule No.	As at 31.03.2019	As at 31.03.2018
Corpus/ Capital Fund	1	28,61,16,579	48,92,20,007
Reserves and Surplus	2	-	-
Earmarked Funds	3	143,16,32,876	247,64,30,984
Secured Loans And Borrowings	4	-	-
Unsecured Loans And Borrowings	5	-	-
Deferred Credit Liabilities	6	-	-
Current Liabilities And Provisions	7	2,38,15,482	1,56,43,155
Total		174,15,64,937	298,12,94,146
ASSETS			
Fixed Assets	8	25,61,53,029	25,80,20,200
Investments-From Earmarked Funds	9	-	-
Investments-Others	10	1,55,20,000	1,55,20,000
Current Assets, Loans, Advances	11&12	146,98,91,907	270,77,53,946
Miscellaneous Expenditure (to the extent not written off or adjusted)		-	-
Total		174,15,64,937	298,12,94,146
Significant Accounting Policies	25		
Contingent Liabilities And Notes on Accounts	26		

Schedule 1 to 26are annexed to and forms an integral part of the Balance Sheet as at 31.03.2019 and the Income and Expenditure Account for the year ended on that date.

For Komandoor&co.llp
Chartered Accountants
For KOMANDOOR & CO., LLP.
Chartered Accountants
K. MOHANACHARYA
Partner
M.No.029082
FRN.No.001405S/S200034

For and on behalf of
National Fisheries Development Board

G.A. Rajakumar
Senior Executive (Fin)

I. Rani Kumudini
Chief Executive

Place: Hyderabad
Date: 30/08/2019

UDIN: 19029082AAAAEQ3237

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Income And Expenditure Account For The Year Ended 31.03.2019

Particulars	Schedule No.	Year Ended 31.03.2019	Year Ended 31.03.2018
Income			
Income from Sales/Services	13	-	-
Income recognised to the extent of grants utilised	14	207,09,68,109	31,11,86,997
Fee/Subscriptions	15	4,72,764	1,12,689
Income from Investments	16	0	0
Income from Royalty	17	0	0
Interest Earned	18	4,62,15,142	6,46,05,058
Other Income	19	22,31,723	14,98,218
Increase/(decrease) in stock of finished goods and works-in-progress	20	-	-
Total (A)		**211,98,87,738**	**37,74,02,962**
Expenditure			
Establishment Expenses	21	9,07,69,225	6,06,35,367
Other Administrative Expenses	22	3,80,10,146	2,62,30,292
Activities Releated expenses	23	2,98,13,894	35,89,956
Grants utilised by implementing agencies under various schemes	24	195,55,34,206	22,07,51,382
Depreciation	8	2,21,59,274	2,50,08,435
Total (B)		**213,62,86,835**	**33,61,95,432**
Balance being excess of Income over Expenditure (A-B)		**-1,63,99,097**	**4,12,07,530**
Transfer to Special Reserve		-	-
Transfer to/ from General Reserve		-	-
Balance being Surplus/ (Deficit) Carried to Corpus/Capital Fund		-1,63,99,097	4,12,07,530
Significant Accounting Policies			
Contingent Liabilities And Notes on Accounts			

Schedule 1 to 26 are annexed to and forms an integral part of the Balance Sheet as at 31.03.2019 and the income and Expenditure Account for the year ended on that date.

For Komandoor&co.llp
Chartered Accountants

For KOMANDOOR & CO., LLP.
Chartered Accountants
K. MOHAN ACHARYA
Partner
M.No.029082
FRN.No.001420S/S200034

For and on behalf of
National Fisheries Development Board

G.A. Rajkumar
Senior Executive (Fin)

L Rani Kumudini
Chief Executive

Place: Hyderabad
Date: 30/09/2019

UDIN:- 19029082AAAAER3237

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad
Receipts And Payments For The Year Ended 31.03.2019

Receipts	(Amount in Rs.) As at 31.03.2019	(Amount in Rs.) As at 31.03.2018	Payments	(Amount in Rs.) As at 31.03.2019	(Amount in Rs.) As at 31.03.2018
I. Opening Balance			**I. Expenses**		
a) Cash in hand	53,093	55,078	a) Establishment Expenses	8,41,46,112	3,79,38,494
b) Bank Balances			b) Administrative Expenses	1,32,03,503	4,24,49,542
			c) Activity Related Expenses	1,00,11,699	-
i) In current account			d) Releases to Schemes	91,26,02,968	39,25,60,330
On Current Accounts With SBH (A/c 62029582916)	27,42,36,842		**II. Payments made against funds for various projects**		
On Current Accounts With SBI (A/c ...)	26,43,18,787	27,83,03,106			
On Current Accounts With AB (A/c 110311100001510)	32,44,98,858	7,23,798	**III. Investments and Deposits made**		
ii) In deposits account			a) Out of Earmarked funds		
iii) Savings account			b) Out of own funds (Investments-Others)		
ICICI (A/c 131601000599)	2,97,71,248	5,82,070	c) Investments in Bank Deposits	28,98,00,000	40,00,00,000
II. Grants Received			**IV Expenditure on Fixed Assets & Capital work-in-Progress**		
a) From Government of India	1,02,61,78,888	16,00,62,888	a) Purchase of Fixed Assets	49,79,784	22,72,789
b) From State Government	-	-	b) Expenditure on Capital Work-in-progress	77,72,327	53,88,257
c) From other sources (details) [Grants for	-	-	**V. Refunds**		
III. Income on Investments from			a) To the Government of India	-	-
a) Earmarked Funds	-	-	b) To the State Government		
b) Own Funds (Other Investments)	-	-	c) To other providers of funds		
IV. Current Assets			d) Refund of Security Deposits/EMDs	15,000	70,000
a) On Bank deposits	1,00,000	12,68,700	**VI. Finance Charges (Interest)**		
b) Interest from States	-	7,03,193	**VII. Other Payments**		
		-	a) Advance to Suppliers		
V. Other Income			b) Other Advances	3,08,69,503	1,62,18,297
a) Interest on Saving Account	4,25,09,261	-	c) Duties & Taxes Paid	7,10,777	50,95,667
c) Fees/Subscriptions	3,74,745	-	**VIII. Current Assets**		
			a) Deposits	2,00,000	
VI. Amount Borrowed			b) Loans & Advances	3,89,78,234	
VII. Any other receipts			**IX. Closing Balances**		
a) Unspent Amount /Refunds from States	5,71,74,716	5,29,84,940	a) Cash in hand	-	53,093
b) Maturity Proceeds of Fixed Deposits	49,08,29,391	1,24,50,72,222	b) Bank Balances		
c) Deductions & Recoveries from Salaries	-	29,23,789	i) Current account		
d) Duties & Taxes Collected	-	36,17,496	SBH (A/c 62029582916)	19,18,33,152	27,42,36,842
e) Earnest Money Deposit Received	2,00,000	1,05,000	SBI (A/c 20105387538)	9,43,18,037	26,43,18,787
f) Crowd Fund	-	81,220	AB (A/c 110311100001510)	66,26,99,888	32,44,98,858
g) Administrative Recoveries	-	2,50,441	ii) Deposits account		
h) Recovery from Mana Technologies including	-	4,05,50,594	iii) Savings account		
i) Refund from CPWD (Capital WIP)		98,74,000	SBI [illegible] branch (A/c 62407540162)	18,190	
j) Recovery of Loans & Advances from Staff	2,18,82,958	17,07,730	SBI, Guwahati (A/c 35708804843)	93,452	
k) Unencash cheques	7,29,279		SBI, Bhubaneswar (A/c 32607018978)	3,01,89,247	
VIII. Indirect Expenses		-	ICICI (A/c 131601000599)	38,332	2,97,71,248
a) Activities Relations etc	3,31,676				
b) Other Administrative exp	50,380				
c) Releases to Schemes	17,14,194				
Total	2,52,47,84,117	1,80,47,75,655	Total	2,52,47,84,117	1,80,47,75,655

Schedule 1 to 25 are annexed to and forms an integral part of the Balance Sheet as at 31.03.2019 and the Income and Expenditure Account for the year ended on that date

For Komandoor&co.llp
Chartered Accountants

For KOMANDOOR & CO., LLP,
Chartered Accountants
K. MOHAN ACHARYA
Partner
M.No.029082
FRN No.001420S/S200034

Place: Hyderabad
Date: .../2019

UDIN:- 19029082AAAAEQ3237

For and on behalf of
National Fisheries Development Board

[illegible]
Senior Executive (Fin)

[illegible]
Chief Executive

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Schedules forming part of Balance Sheet as at 31.03.2019

Schedule 1 -Corpus/ Capital Fund :	(Amount in Rs.)	
	As at 31.3.2019	As at 31.3.2018
Balance as at beginning of the year	48,92,20,007	44,80,12,477
LESS: Contribution towards Corp/Capital Fund	18,67,04,331	
Add/(Deduct): Balance of net income/(expenditure) transferred from the	-1,63,99,097	4,12,07,530
Balance As At The Year End	**28,61,16,579**	**48,92,20,007**

Schedule 2 Reserves and Surplus:	(Amount in Rs.)	
	As at 31.3.2019	As at 31.3.2018
1. Capital Reserve:		
As per last Account	-	-
Addition during the year	-	-
Less: Deductions during the year	-	-
2. Revalution Reserve:		
As per last Account	-	-
Addition during the year	-	-
Less: Deductions during the year	-	-
3. Special Reserves		
As per last Account	-	-
Addition during the year	-	-
Less: Deductions during the year	-	-
4. General Reserve		
As per last Account	-	-
Addition during the year	-	-
Less: Deductions during the year	-	-
Total	-	-

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Schedules forming part of Balance Sheet as at 31.03.2019

Schedule 3 -Earmarked Funds :	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
a) Opening Balance of the funds (a)	2,47,64,30,984	2,62,44,93,543
b) Additions to the funds		
i. Grants		16,00,52,000
ii. Income from		
iii. Other additions		
		30,72,439
	-	-
	2,47,64,30,984	**16,31,24,439**
c) Utilisation/Expenditure towards		
i. Capital Expenditure		
Fixed Assets		
Others		
ii. Revenue Expenditure		
Grants utilised under various schemes by	1,04,47,98,108	22,07,31,382
Salaries, Wages and allowances		6,06,35,367
Other administrative expenses		2,98,20,250
Refund to Government of India		-
Total (c)	1,04,47,98,108	31,11,86,999
Net Balance as at The Year End (a+b-c) :	1,43,16,32,876	2,47,64,30,984

Schedule 4- Secured Loans And	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1. Central Government	-	-
2. State Government	-	-
3. Financial Institutions	-	-
a) Term Loans	-	-
b) Interest accured	-	-
4. Banks	-	-
a) Term Loans	-	-
Interset accured and Due	-	-
b) Other Loans	-	-
Interset accured and Due	-	-
5. Other Institutions and Agencies	-	-
6. Debentures and Bonds	-	-
7. Others	-	-
Total	-	-
Note : Amounts due within one year		

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Schedules forming part of Balance Sheet as at 31.03.2019

Schedule 5- Unsecured Loans And	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1. Central Government	-	-
2. State Government	-	-
3. Financial Institutions	-	-
4. Banks	-	-
a] Term Loans	-	-
b] Other Loans	-	-
5. Other Institutions and Agencies	-	-
6. Debentures and Bonds	-	-
7. Fixed Deposits	-	-
8. Others	-	-
Total	-	-

Note : Amounts due with one year

Schedule 6- Deferred Credit Liabilities:	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
a) Acceptances secured by Hypothecation of capital equipment and other assets	-	-
b) Others	-	-
Total		

Note: Amounts due within one year

Schedule 7- Current Liabilities And	(Amount in Rs.)
A. Current Liabilities	As at 31.3.2019 / As at 31.3.2018
1. Acceptances	- / -
2. Sundry Creditors	- / -
a] For Goods	2,61,170 / -
b] Others	- / -
3. Advances Received	- / -
4. Interest accured but not due on :	
a] Secured loans/	- / -
b] Unsecured	- / -
5. Statutory Liabilities :	
a) Overdue	- / -
b) Others	- / -
6. EMD Security Deposit	6,80,450 / 4,70,450
7. Salary & manpower related payables	73,23,928 / 39,17,793
8. Unencashed cheques	3,42,606 / 1,64,184
9. Other Liabilities (Short Term Provisions)	1,24,30,592 / 75,32,599
Total (A)	2,10,38,646 / 1,20,85,026
B. Provisions [Refer Schedule 25.12]	
1. For Taxation	9,72,064 / -
2. Gratuity	18,04,972 / 15,62,583
3. Superannutation/Pension	- / -
4. Accumulated Leave Encashment	- / 19,95,546
5. Trade Warranties/Claims	- / -
Total (B)	27,77,036 / 35,58,129
Total (A+B)	2,38,15,682 / 1,56,43,155

National Fisheries Development Board,

Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNPA, Hyderabad

Schedule - 8: Fixed Assets

As at 31.03.2019

S.No.	Description	Gross Block: Cost/Valuation as at 01.04.2018	Gross Block: Additions during the year	Gross Block: Deductions during the year	Gross Block: Cost/Valuation as at 31.03.2019	Depreciation: During the year	Depreciation: On additions during the year	Depreciation: On deductions during the year	Depreciation: As at 31.03.2019	Net Block: As at 31.03.2019	Net Block: Rate of Depreciation
A	FIXED ASSETS(Other than CWIP)										
1	LAND										
	a) Freehold	2,85,62,988	-	-	2,85,62,988			-	-	2,85,62,988	-
	b) Leasehold	-	-	-	-			-	-	-	-
2	BUILDINGS										
	a) On Freehold Land	-		-	-			-	-	-	-
	b) On Leasehold Land	13,54,84,545	0	-	13,54,84,545	1,35,48,453		-	1,35,48,453	12,19,36,091	10.00%
	c) Ownership Flats/Premises	-		-	-			-	0	-	-
	d) Superstructures on Land not belonging to the entity	-		-	-			-	0	-	-
		-		-	-			-	0		
3	PLANT MACHINERY & EQUIPMENT	2,97,374	21,356	-	3,18,730	29,808	2,472	-	32,678	2,86,052	15.00%
4	VEHICLES	32,83,097	24,85,091	-	57,68,188	1,89,765	3,37,732	-	5,27,498	52,40,690	15.00%
5	FURNITURE FIXTURES	36,31,816	3,41,281	-	39,73,097	3,65,282	17,065	-	3,82,346	35,90,751	10.00%
6	OFFICE EQUIPMENTS	42,79,377	7,52,434	-	50,31,811	4,37,908	45,483		4,83,398	45,48,413	10.00%
7	COMPUTERS/PERIPHERALS	7,19,228	49,56,112	-	56,75,340	2,87,612	15,77,116	-	18,64,728	38,10,612	40.00%
8	ELECTRICAL INSTALLATIONS	3,47,25,574	2,49,186	-	3,49,74,760	34,71,507	12,028	-	34,83,535	3,14,91,225	10.00%
9	LIBRARY BOOKS	-		-	-			-	0	0	-
10	TUBE WELLS & W.SUPPLY	-		-	-			-	0	0	-
11	OTHER FIXED ASSETS	1,36,293		-	1,36,293	13,609		-	13,609	1,22,684	10.00%
	NFFBB POND FACILITY	75,85,328	1,96,65,633.00		2,72,50,961	17,41,404			17,41,404	2,55,09,557	10.00%
	TOTAL OF CURRENT YEAR	21,65,06,867	2,84,70,559	-	23,79,28,889	2,00,66,901	20,52,772	-	2,21,19,174	22,48,36,361	
	PREVIOUS YEAR	22,68,29,818	1,34,89,527	4,150.00	24,15,12,302	2,48,81,960	2,08,879	-	2,50,08,440	21,65,06,867	
B	CAPITAL WORK IN PROGRESS				0	-	-	-	-		-
	TOTAL OF CURRENT YEAR(ANNEXURE-1 OF SCHEDULE 8B)					-	-	-	-	3,13,37,678	
	PREVIOUS YEAR					-	-	-	-	4,15,13,330	
C	GRAND TOTAL OF CURRENT YEAR	21,65,06,867	1,98,27,122	0	23,75,28,589	2,00,66,582	20,52,772	-	2,21,19,274	25,61,21,839	-
	PREVIOUS YEAR	22,68,29,426	1,54,89,527	4,150	24,15,12,302	2,48,81,960		-	2,50,08,435	25,80,20,206	-
	Notes:										
	1) No assets were purchased on Hire Purchase Basis and included above.										

ANNEXURE-1 of Schedule 8B (DETAILS OF CAPITAL WORK IN PROGRESS)

S.no	Particulars	Opening Balance	Additions During the Year	Capitalised/Booked as expenses	Closing Balance as at 31-03-2019
1	E-Market		13,45,187		13,45,187
2	Mera Matsya Dhan Web Portal & M.App	37,75,857	9,08,542		46,84,399
3	Survey has incurred on Mechanisation		54,50,000		54,50,000
4	Advance for Land Acquisition	4,79,049			4,79,049
5	Advance for SPF Project at Srikakulam	14,27,200		14,27,200	
6	Adv to C.O.E. U.B.S.D Bhubaneswar	21,71,063			21,71,063
7	Adv to NFFBB Kausalyaganga Bhubaneswar	1,52,36,791		96,75,636	55,61,155
8	Capital WIP for Administrative Building	76,61,054			76,61,054
9	E-Governance and FMS		31,52,451		31,52,451
10	Financial Accounting Software	8,31,380			8,31,380
	Grand Total	4,18,19,535	1,08,97,180	2,10,57,836	3,13,17,678

Note: Capital work in progress of Advance for SPF Project at Srikakulam has been booked as revenue expenditure in the current year.

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Schedules forming part of Balance Sheet as at 31.03.2019

Schedule 9 - Investments From	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1. In Government Securities	-	-
2. Other approved Securities	-	-
3. Shares	-	-
4. Debentures and Bonds	-	-
5. Subsidiaries and Joint Ventures	-	-
6. Others (to be specified)	-	-
Total	-	-

Schedule 10 - Investments- Others (Long	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1. In Government Securities	-	-
2. Other approved Securities	-	-
Sahakari Society Ltd)	1,55,20,000	1,55,20,000
20% shareholding		
4. Debentures and Bonds	-	-
5. Subsidiaries and Joint Ventures	-	-
6. Others (to be specified)	-	-
Total	1,55,20,000	1,55,20,000

Schedule 11 - Current Assets, Loans, A. Current Assets:	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1. Inventories:		
a) Stores and Spares		-
b) Loose Tools		-
c) Stock-in-Trade		
Finished Goods		-
Work-in - Progress		-
Raw Material		-
2. Sundry Debtors:		
a) Debts Outstanding for a		-
b) Others		-
3. Cash Balances in Hand (including	-	50,000
4. Bank Balances :		
a) With Scheduled Bank:		
On Current Accounts	19,18,53,153	27,42,36,842
On Current Accounts	6,43,10,058	26,43,10,707
On savings Accounts	38,332	2,97,71,248
n current Accounts with SBI [BHUBANESWA	2,01,89,247	
On Current Accounts With	86,26,99,880	32,44,98,650
On current Accounts with SBI [ASSAM]	93,452	
On saving Accounts With SBI	10,190	
b) With non-scheduled		
On Current		-
On Deposit		-
On savings		-
c) Term Deposits With		
State Bank of Hyderabad		47,25,57,292
ANDHRA BANK	20,26,10,533	-
CORPORATION BANK	1,98,00,000	-
INDIAN BANK	7,00,00,000	-
d) Remittance in Transit		-
5. Deposit(Rent,Telephone & Other	9,47,128	8,47,128
6. Release to implementing agencies for Various Activities under various schemes		1,38,92,12,231
Total (A)	1,43,25,51,972	2,67,54,84,078

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Schedules forming part of Balance Sheet as at 31.03.2019

Schedule 12 - Current Assets, Loans, (Amount in Rs.)

B. Loans, Advances And Other Assets	As at 31.3.2019	As at 31.3.2018
1. Loans :		
a) Staff	-	-
b) Other Entities engaged in activities/Objectives similar to that of	-	-
i) Matsya Federation	-	-
c) Others	-	-
2. Advances and other amounts recoverable in cash or in kind or for value		
a)Advances to Staff	21,47,837	33,20,219
b)TDS Receivable	41,35,206	40,91,189
c)Advances to Suppliers/Service Provider	1,94,84,727	60,75,422
3.Prepaid Expenses		22,969
4. Income Accrued :		
a) On Investments from Earmarked		-
b) On Investments-Others		-
i) Interest on Fixed Deposit- SBH	7,90,899	80,83,801
ii) Interest on Fixed Deposit- ICICI		-
iii) Interest on Fixed Deposit- HDFC		-
c) On Loans and Advances		-
d) Others(TA and DA recovery)		-
e) Others(Intereat Receivable)	1,62,372	57,375
5. Reimbursement of Expenses receivable		
a) Asia Pacific Fishery Commission	24,09,679	24,09,679
b) FAO Sub Committee	82,09,215	82,09,215
Total (B)	**3,73,39,935**	**3,22,69,869**
Total (A+B)	**1,46,98,91,907**	**2,70,77,53,946**

National Fisheries Development Board,
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Schedules forming part of Income & Expenditure for the year ended 31.03.2019

Schedule 13- Income From Sales/ Services	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1) Income from Sales	-	-
a) Sale of finished Goods	-	-
b) Sale of Raw Materail	-	-
c) Sale of Scraps	-	-
2) Income From Services		
a) Labour and Processing	-	-
b) Professional/Consultancy	-	-
c) Agency Commission and	-	-
d) Maintenance Services (	-	-
e) Others	-	-
Total	-	-

Schedule 14 - Income recognised to the extent of grants utilised	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1) Income Recognised to the extent of	2,07,09,68,109	31,11,86,997
2) State Government (s)		-
3) Government Agencies		-
4) Institutions/Welfare Bodies		-
5) International Organisations		-
6) Others		-
Total	2,07,09,68,109	31,11,86,997

Schedule 15- Fees/Subscriptions	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1) Entance Fees	-	-
2) Annual Fees/Subscriptions	-	-
3) Seminar/Program Fees	-	-
4) Consultancy Fees	-	-
5) Others (Licence Fees)	4,72,764	1,12,689
Total	4,72,764	1,12,689

Schedule 16- Income From Investments	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1) Interest	-	-
a) On Govt Securities	-	-
b) Other Bonds/ Debentures	-	-
2) Dividends :	-	-
a) On Shares	-	-
b) On mutual Fund securities	-	-
Total	-	-

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Schedules forming part of Income & Expenditure for the year ended 31.03.2019

Schedule 17 Income From Royalty	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1) Income from Royalty	-	-
2) Income from Publication	-	-
3) Others	-	-
Total	-	-

Schedule 18 - Interest Earned	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1) On Term Deposits:		
a) With Scheduled Banks	36,10,646	6,26,26,146
b) With Non Scheduled		-
c) With Institutions		-
d) Others		-
2) Savings Account		
a) With Scheduled Banks	4,26,04,495	12,68,780
b) With Non Scheduled		-
c) With Institutions		-
d) Others		-
3) On Loans		
a) Employees/Staff		-
b) Matsya Feil , Kerala		-
4) Interest on Debtors and Other		
a) Interest from States		7,10,132
b) Interest due from M/s Moana		-
c)Interest from security deposit with M/s Southern power distribution company of		
Total	4,62,15,142	6,46,05,058

Schedule 19 - Other Income	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
1) Profit on sale/disposal of assets:		-
a) Owned assets		-
b) Assets acquired out of		-
2) Export Incentives realized		-
3) Fee for Miscellaneous Services		-
4)Sale of Fish	16,51,673	
5) Miscellaneous Income	13,758	10,94,826
5) Recovery of HRA		2,21,360
6) Recovery of Water charges	3,93,340	1,23,832
7)News Paper Sold	520	-
8) Guest House Rent		57,800
9) RTI application fees		400
10)Electricity charges recovery	8,348	
11)written of unencash cheque	1,64,184	-
Total	22,31,723	14,98,218

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

Schedule 20 - Increase/ (Decrease) In Stock of Finished Goods & Work in	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
a) Closing Stock	-	-
Finished Goods	-	-
Work-in-progress	-	-
b) Less : Opening Stock	-	-
Finished Goods	-	-
Work-in-progress	-	-
Total	-	-

Schedules forming part of Income & Expenditure for the year ended 31.03.2019

Schedule 21 - Establishment Expenses	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
a) Salaries and Wages	4,24,17,329	1,41,53,559
b) Allowances and Bonus	12,63,681	48,99,288
c) Contribution to N.P.S		8,44,564
d) Pension Contribution	31,04,758	15,64,984
e) Leave Salary Contribution	20,69,623	13,88,499
f) Provision for Gratuity	2,42,389	2,75,735
g) Salary of Consultants	4,02,64,520	1,89,88,590
h) Manpower Outsourcing Services	3,41,450	1,76,84,771
i) Remuneration to Interns	4,16,366	4,07,674
j) Provision for Accumulated Leave	6,49,109	4,27,703
Total	9,07,69,225	6,06,35,367

National Fisheries Development Board,
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Schedule 22 - Others Administrative Expenses	(Amount in Rs.) As at 31.3.2019	As at 31.3.2018
a) Electricity and Power Charges	20,47,549	18,57,156
b) Water Charges	1,37,061	2,32,439
c) General Insurance	4,74,650	2,16,572
d) Repairs & Maintenance	19,46,882	9,16,426
e) Postage, Telephone and Communication	23,97,301	14,20,891
f) Printing & Stationery	3,74,197	6,41,229
g) Domestic Travelling and Conveyance Expenses	1,07,23,627	66,39,171
h) Running and Maintanence of Car	1,76,272	1,07,200
i) Audit Fee	1,18,000	1,18,000
j) Advertisement and Publicity	72,26,462	27,73,031
k) Annual Maintenance Charges	14,71,390	6,71,120
l) Garden Maintenance		10,76,777
m) Exposure Visit Expenses		2,20,190
n)Catering Charges	14,78,498	
o) Entrance Exam expenses		99,421
p) Bank Charges	9,755	5,473
q) Book and Periodicals		75,449
r) World Fisheries Day Exp		49,93,582
s) Legal Expenses	15,000	3,000
t) Miscellaneous Expense		52,659
u) NSDL Filling Charges		3,926
v) Office Expenses	20,53,573	9,35,707
w)Professional Accounting & Service	598025	2,98,193
x) Property Tax	2,21,863	2,21,863
y) Vehicle Hire Charges	32,65,634	22,32,604
z)meeting expenses		3,93,536
aa) Reimbursement Expenses		7,014
ab) Staff Medical Expenses		39,698
ac) Penalties		29,965
ad)auto sweep charges	99,210	
ae)Boarding and Lodging Exp	1,87,318	
af)Examination Exp	36,000	
ag)Fish Net NFFBB	19,875	
ah)Frankling Machine Licence Fee	5,034	
ai)House keeping training to Outsourcing sta	20,000	
aj)Independence Day Celebrations	11,721	
ak)International Womens day celebrations	22,198	
al)Consultancy Fee on Afc India Ltd	11,11,560	
am)Consultancy Fees on Aqua One Centre	40,000	
an)Governing Body/executive/Review Meetin	56,931	
ao)News Papers and Magzines	51,157	
ap)Office Aquarium Maintenance	1,02,450	
aq)purchases	10,100	
ar)Pest Management Solutions	1,68,503	
as)Temp Fencing Expenses	13,82,350	
Total	3,80,10,146	2,62,30,292

National Fisheries Development Board,
Fish Building, Opp to Pillar No 235, PVNR Expressway, SVPNAP, Hyderabad

SCHEDULES :23 Activities Related Exp

	31.3.2019	31.3.2018
NFDB Guwahati	12,80,947	2,77,926
Nfbb Bhubanswar	81,30,724	24,48,951
Participations Fish Festival,Promotional Activ	1,00,21,912	6,53,780
World Fisheries Day Celebration & Awards	39,81,678	
Conducting Workshops & Seminar by NFDB	14,96,431	
Exbition and Conference	22,19,573	2,09,299
Monitoring & Evaluation and Other Activities	1,46,800	
Swatch Bharat	25,35,829	
Grand Total	2,98,13,894	35,89,956

Schedules forming part of Income & Expenditure for the year ended 31.03.2019

	(Amount in Rs.)	
Schedule 24 - Grants utilised by implementing agencies under various schemes	As at 31.3.2019	As at 31.3.2018
a) Grants given to institutions/	-	22,07,31,382
coastal Aquaculture Exp	-	38,54,970
cold water Fisheries Exp	-	20,91,977
Domestic Marketing Exp	-	8,99,65,097
HRD Exp	-	2,24,18,578
Infrastructure for Post Harvest Exp	-	3,42,76,329
Intensive Aquaculture Exp	-	70,64,936
Intensive Aquaculture Ponds and Tanks Exp	-	57,28,831
M&E Exp	-	99,120
Mariculture Exp	-	19,65,381
Other Activity Exp	-	1,58,61,481
Reservoir Fisheries Development	-	3,13,68,049
SWC Exp	-	24,029
Technology Upgradation Exp	-	60,12,604
2405 General	1,67,69,60,540	
2405 SCSP	8,90,33,527	
2405 STSP	3,92,25,978	
2552 NEER	15,03,14,251	
Total	1,95,55,34,296	22,07,31,382

Schedule-25

NATIONAL FISHERIES DEVELOPMENT BOARD
HYDERABAD

CHANGE OF ACCOUNTING POLICIES

1) All the releases were treated as expenditure as and when released instead of previous system of utilization certificates based Expenditure.

2) Grants Un-utilized during the year to the extent of available bank balances and Fixed deposits were shown under Ear-marked grants on the liabilities side of the Balance sheet.

3) Releases to Schemes held under the head Loans & Advances in the previous year were adjusted against the Ear marked funds held in the Previous year.

4) Release to Schemes Left Over under the head Loans & Advance on the Assets Side were adjusted to capital fund of Rs.18,67,04,330

For Komandoor&co.llp
Chartered Accountants

KOMANDOOR & CO., LLP.
Chartered Accountants

K. MOHAN ACHARYA
Partner
M.No.029082
FRN.No.0014205/S200034

For and on behalf of
National Fisheries Development Board

G.A. Rajkumar
Senior Executive (Fin)

I. Rani Kamadini
Chief Executive

Place: Hyderabad
Date: 30/10/2019

UDIN: 19029082AAAAE03237

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NATIONAL FISHERIES DEVELOPMENT BOARD
HYDERABAD

NOTES TO ACCOUNTS

1) Financial Statements were prepared on Historical cost convention, unless otherwise stated following accural method of accounting and generally accepted accounting principles. The Financial Statements were presented as per the uniform format of accounts Prescribed by the Ministryof finance for all the Government and Autonomous Organisations

2) Due to change of Accounting policy figures were re-grouped as and where required.

3) Income other than Grants was utilized towards administrative and establishment expenses to the extent available.

4)Contingent Liabilities

Following are the Income tax demands pertaining to the entity as at 31-03-2019.

Assessment Year	Demand Identification Number	Amount in Rs.
2015-16	2017201510159384463T	26,57,75,820
2017-18	2018201737104154412T	62,50,87,180
	TOTAL	89,08,63,000

For Komandoor&co.llp
Chartered Accountants

For KOMANDOOR & CO., LLP.
Chartered Accountants

K. MOHANACHARYA
Partner
M.No.029082
FRN.No.001420S/S200034

For and on behalf of
National Fisheries Development Board

G.A. Rajasekar
Senior Executive (Fin)

I. Ravi Kumudini
Chief Executive

Place: Hyderabad
Date: 30/09/2019

UDIN:- 19029082AAAAEG3237.