Aquaculture is one of the fastest-growing sectors in the world. India, with its vast coastal area, offers immense opportunities for fisheries in both marine and inland waters. The country has the second-largest share in the global aquaculture market, mainly due to its 2.36 million hectares of ponds and tanks, a coastline of 7,500 kms and brackish water area of 1.1 million, which offers a ground for fish farming. In India, the fisheries sector is a means of livelihood for ~28 million people in the country.

The country’s aquaculture sector is mainly fragmented into inland and marine fisheries. A brief description of the sectors in fisheries is listed in the below table.
The Food and Agriculture Organisation (FAO) 2020 report revealed that Asia has the largest share in the global fish production at 89%, since the last 20 years. In 2018, the global capture fish production reached the highest-ever level and recorded 96.4 million tonnes; this was driven by marine capture and inland fishing. The top seven key producers were China, Indonesia, Peru, India, Russia, the US and Vietnam, accounting for ~50% of the total global capture production.

India's Fish Production (million metric tonnes)

Source: Department of Animal Husbandry and Dairying and Department of Fisheries, Economic Survey 2020-21

India accounts for 7.58% of the global production. Fish production in the country reached an all-time high of 14.16 million metric tonnes between 2019 and 2020. The fisheries sector contributes 1.24% to the gross value added (GVA) and 7.28% to the agricultural GVA.

India’s Fish Production (million metric tonnes)
India’s Share of Fish, Crustaceans and Molluscs & Preparations in World Export

The Indian fisheries sector has witnessed a major transformation from traditional marine fisheries to a controlled inland fishery setup, which is now a key contributor to the overall fish production in the country.

BLUE REVOLUTION

Blue Revolution was launched (between 1985 and 1990) in the 7th five-year plan, with an objective to boost fisheries and extend benefits to the fishermen community. The Ministry of Fisheries, Animal Husbandry and Dairying manages the objectives of ‘Blue Revolution’ by focusing on ways to enhance productivity of aquaculture and fisheries from both the inland and marine sources. The ministry also encourages economically backward sections such as scheduled castes, scheduled tribes and women to take up job opportunities in this sector.

Components included under the Blue Revolution scheme are as follows:

- National Fisheries Development Board (NFDB) and its activities
- Strengthening database and geographical information system of the fisheries sector
- Developing inland fisheries and aquaculture
- Operating the National Scheme of Welfare of Fishermen
- Developing marine fisheries, infrastructure and post-harvest operations
- Monitoring, control and surveillance (MCS) and other need-based interventions
- Institutional arrangement for the fisheries sector

Objectives of Blue Revolution

- Leveraging India’s fish production potential on both—island and the marine sector
- Upgrading fishery mechanism through new technologies and automation
- Boosting incomes of fishermen by enhancing productivity and improving post-harvest infrastructure such as marketing, logistics, e-commerce, technology and innovation
- Ensuring active participation in development programmes and schemes from the fishing ministry
- Accelerating export earnings with a key focus on benefits covering the institutional mechanisms
- Enhancing food and nutritional security of the country
Developments through Blue Revolution

The Blue Revolution initiative joined forces with Fish Farmers Development Agency (FFDA) to develop the aquaculture and fisheries sector by introducing innovations in rearing, marketing, exporting and fish breeding. As of 2019, India achieved a record annual growth of 14.8%, higher than the global average of 7.5%, in the production of fish and fish products. The country has become the world’s second-largest producer of fishes and fish products, with exports worth >Rs. 47,000 crore (US$ 6.50 billion). Fishery has taken a significant share in India’s exports over the last five years with a growth rate of 6-10%. The sector also contributes 1% to the overall GDP and 5% to India’s agricultural GDP. Currently, the US is the largest importer of Indian seafood products, with a share of 26.5%, followed by South East Asian countries at 25.7% and the European Union countries at 20.1%.

GOVERNMENT INITIATIVES

Pradhan Mantri Matsya Sampada Yojana (PMMSY)
In May 2020, the government launched Pradhan Mantri Matsya Sampada Yojana (PMMSY), a new flagship scheme, to fully tap the potential of India’s fisheries sector. The scheme was launched with an estimated investment of Rs. 20,050 crores (US$ 2.77 billion) for five years—from FY 2020-21 to FY 2024-25. This investment is the highest-ever in India’s fisheries sector. The PMMSY will extend welfare programmes and social security schemes to all fishermen. The scheme will also facilitate the Department of Fisheries to smoothen the value chain, including infrastructure modernisation, traceability, production, post-harvest management and quality control. This ambitious scheme aims to:

• Increase fish production to 220 lakh metric tonnes by 2024-25.
• Double export earnings to Rs. 1,00,000 crores (US$ 13.82 billion).
• Generate ~55 lakhs employment opportunities in the fisheries sector.
• Increase aquaculture productivity to 5 tonnes per hectare (up from national average of 3 tonnes per hectare).
• Boost domestic fish consumption and attract investments in the fisheries sector.

The PMMSY scheme introduced insurance coverage for fishing vessels; this was first-of-its-kind move in the sector. The scheme gathered attention from state governments, and by January 2021, project proposals worth Rs. 6,567.20 crore (US$ 907.91 million) were received and of these, projects worth Rs. 2309.08 crore (US$ 319.23 million) have already been approved.

Department of Fisheries
The Department of Fisheries came into existence in February 2019 and falls under the Ministry of Fisheries, Animal Husbandry and Dairying. The department is responsible for
formulating policies and schemes to develop inland, marine and coastal fisheries in the country. It also oversees fishery institutes, namely Fishery Survey of India, Mumbai; Central Institute of Fisheries Nautical and Engineering Training (CIFNET), Kerala; Central Institute of Coastal Engineering For Fishery (CICEF), Bangalore; National Institute of Fisheries Post Harvest Technology and Training (NIFPHATT), Kochi; National Fisheries Development Board (NFDB), Hyderabad; and Coastal Aquaculture Authority, Chennai.

**Fisheries and Aquaculture Infrastructure Development Fund (FIDF)**

The Indian government established a dedicated ‘Fisheries and Aquaculture Infrastructure Development Fund’ (FIDF) with an investment of Rs. 7,522 crore (US$ 1.04 billion) in October 2018. FIDF pool is a contribution of National Bank for Agriculture and Rural Development (NABARD), National Cooperatives Development Corporation (NCDC) and scheduled banks.

By the end of 2020, projects worth Rs. 3,467 crore (US$ 479.31 million) were approved for 13 states. As of mid-January 2021, a total of 44,673 Kisan credit cards were issued to fishermen and an additional 4.04 lakh applications from fishermen were in process with banks. Under the FIDF scheme, a person can avail loan over a period of five years, with maximum repayment period of up to 12 years. The fund also caters to various needs of the aquaculture sector, including constructing ponds, installing cages in reservoirs, fish processing units, and more.

The FIDF aims to:
- Improve infrastructure for the fisheries sector by developing fishing harbours, fish landing centres, fish seed farms, fish feed plants, etc.
- Achieve sustainable growth of 8-9% and scale up to 20 million metric tonnes in fish production by 2022-23.
- Create 9.40 lakh employment opportunities.
- Attract private investments in the sector.
- Adopt innovative technologies for fishing and the aftermarket processes.
- Strengthen cold chain infrastructure facilities such as ice plants, cold storage, fish logistics, fish processing units and fish markets.

In July 2020, the government partnered with the Department of Fisheries and the NABARD for sanctioning a FIDF loan of Rs. 450 crore (US$ 62.21 million) for construction of three fishing harbours—Uppada in East Godavari district, Machilipatnam Phase-II and Nizampatnam Phase-II. The total project cost is ~Rs. 1,016 crore (US$ 140.46 million).

**Budget 2020-21**

In Union Budget 2021-22, the government increased allocation to the Department of Fisheries from Rs. 825 crore (US$ 114.06 million) in the previous year to Rs. 1,220.84 crore (US$ 168.78 million), which is the highest-ever budgetary support received by the department. In addition, Rs. 1000 crore (US$ 138.25 million) was allocated for the Pradhan Mantri Matsya Sampada Yojana (PMMSY) scheme.

Also, Finance Minister Nirmala Sitharaman proposed substantial investments towards developing modern fishing harbours and fish landing centres. Kochi, Chennai, Visakhapatnam, Paradip and Petuaghat fishing harbours will be the first five beneficiaries of the new investment.
STATE-WISE INITIATIVES TO BOOST AQUACULTURE

GOA
On February 7, 2021, Union Fisheries Minister Giriraj Singh announced an investment of Rs. 400 crore (US$ 55.30 million) in Goa. These funds will be used to construct 30 fish landing jetties linked to the main roads, where fishermen can anchor their boats near their villages. Other initiatives include utilisation of 72 sq. km. area for cage culture (an aquaculture production system where fishes are held in floating net pens). The central government will also appoint ‘Sagar Mitra’, who will help the fishermen liaison with the government, for each of the 70 fishing villages in the state. The Sagar Mitra scheme aims to develop fisheries in rural areas by educating the local youth on fishing and fisheries.

KERALA
‘Parivarthanam’ scheme
In September 2020, Kerala launched ‘Parivarthanam’ scheme to enhance the livelihood of fishing community. The scheme is headed by Kerala State Coastal Area Development Corporation (KSCADC); and will enable home delivery of fresh fish products and guarantee a fixed price to fishermen. The scheme further aims to uplift the economically-weak fishermen community by generating employment opportunities, especially for enthusiastic youngsters and migrant workforce returning home due to COVID-19. The Central Institute of Fisheries Technology (CIFT) of Union governments will monitor quality, procurement and processing of the fish produce. Every fish product and seafood unit will carry the quality stamp of CIFT, which is India’s research centre in fishing and fish processing.

Launch of marine ambulances
In January 2021, J. Mercykutty Amma, Kerala’s Minister for Fisheries and Harbour Engineering, announced the launch of two modern marine ambulances each costing Rs. 6.08 crore (US$ 0.83 million) to provide swift emergency response to fishermen in distress in seas. The two ambulances were named ‘Pratyasa’ and ‘Karunya’, following the first ambulance ‘Prateeksha’, which was launched in August 2020. These 23-meter-long vessels can simultaneously provide emergency medical care for up to 10 passengers.

MAHARASHTRA
The Maharashtra government has announced a major relief for the state’s fishermen community, who faced severe ‘fishing drought’ on account of the pandemic. Fishing boat owners are likely to receive a one-time cash compensation of up to Rs. 30,000 (US$ 414.75). To be precise, licenced fishing boat owners may receive cash ranging from Rs. 5,000 (US$ 69.12) to Rs. 20,000 (US$ 276.50), depending on the type of boat. Further, a one-time grant of Rs. 3,000 (US$ 41.47) was announced for fishermen procuring ice boxes. In the state, ~76,345 households are directly dependent on fishing, while another 9.93 lakh are indirect beneficiaries of the sector. The relief package is likely to benefit 54,573 households at a cost of Rs. 65 crore (US$ 8.99 million) to the state treasury.

JAMMU & KASHMIR (J&K), ODISHA
Between August 2020 and October 2020, J&K and Odisha introduced biofloc technology (BFT) to boost fish farming in both states. Biofloc technique is an alternative to the conventional open pond fish farming. In traditional fish farming method, the feed is dropped into water; this feed is then consumed by fishes and the remaining feed eventually
degrades and turns into toxic metabolites; thereby, polluting the water. Through Biofloc farming, the wasted feed and fish excreta is converted into feed, which can be consumed by fishes. Biofloc comprises microorganisms, fungi and algae, which absorb all the inorganic waste and enhances the water quality.

Many states in India are already adopting this technology to enhance the fish output and quality. Dr. Arun Kumar Sahoo, Odisha Fisheries and Animal Resources Minister, revealed that the unit cost to install a Biofloc of two tanks is Rs. 1.50 lakh (US$ 2.07 thousand), while a biofloc unit of six tanks costs ~Rs. 4 lakh (US$ 5.53 thousand). The Odisha state government provides 40% subsidy to regular farmers, while 60% subsidy is provided to SC & ST beneficiaries for this scheme.

HIMACHAL PRADESH
In October 2020, Himachal Pradesh announced plans to build 15 land-based fishponds using Recirculating Aquaculture System (RAS) technology to boost local fish production over the next five years. In a recirculating aquaculture system, the water is purified and reused continuously. Fresh water is added to tanks only to make up for splash out and evaporation. The waste products such as decomposed feed and fish excreta are either removed or converted into non-toxic products by the system components. This system filters and cleans the water for recycling through fish culture tanks.

Five out of the total 15 ponds will be built in normal waters in Una, Mandi and Surmaur districts and each pond is expected to produce 40 metric tonnes annually. The remaining 10 ponds will be set up in cold water areas in Kinnaur, Sirmaur, Shimla, Mandi, Chamba and Kullu districts, with expected production of 4-10 metric tonnes annually for each pond.

Himachal Pradesh’s Fishery Minister Virender Kanwar stated that the 15 fishponds would be able to produce ~270 metric tonnes of fish per year once operational. Rainbow trout will be raised in cold water ponds, while pangasius, tilapia and common carp will be farmed in the normal water areas.

KARNATAKA
In October 2020, the College of Fisheries, Mangalore, proposed setting up a coastal marine museum complex along the 320-kms. coastline of the state. Professor and Dean, A. Senthil Vel, stated that a part of this complex will extend to the sea and give people a real feel of the aquatic life. He has proposed construction of the museum complex to be undertaken either under the PMMSY or any other state government scheme. The museum complexes are allowed under the Coastal Regulatory Zone norms. Prof. Vel said the complex can be set up in about 10 acres.
DEVELOPMENTS IN THE SECTOR

Evolving cold chain infrastructure in India
As of December 2019, India had a total cold storage capacity of 22.67 million tonnes. The government under the following two schemes—Mission for Integrated Development of Horticulture (MIDH) of the Agriculture Ministry and Pradhan Mantri Kisan Sampada Yojana (PMKSY)—will provide financial assistance to build cold storage facilities in India. Between FY15 and FY20, 1,303 new cold storage facilities with a total capacity of 4.56 million tonnes were established. Among states, Uttar Pradesh has the highest number of cold storage facilities at 1,817 facilities with a total capacity of 9.88 million tonnes. In May 2020, Rs. 20,000 crore support was announced under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) for integrated sustainable, inclusive development of marine and inland fisheries. Out of the announced funds, Rs. 11,000 crore was allocated for activities in marine, inland fisheries and aquaculture, and Rs. 9,000 crore was allocated for infrastructure including fishing harbours, cold chain, markets, etc.

Agri-tech start-ups catering to aquaculture cold chain
A robust cold chain framework is the backbone of aquaculture sector. The entire process of handling the produce requires hygienic, modern and secure facilities. Many agri-tech start-ups are easing this process with robust cold chain facilities. Monitoring the temperature of the produce in transit is crucial to avoid unnecessary losses. Many start-ups have developed innovative solutions to address the need for real-time temperature monitoring and location tracking in agriculture and aquaculture produce.

CloudTrack, an Indian start-up, develops software that captures real-time monitoring of cold chain logistics. The company’s software sends alerts via SMS, calls and app notifications when the temperature changes differ to the pre-set thresholds. In addition, the software provides real-time tracking of the entire fleet.

Chennai-based Aqua Connect works with shrimp and fish aquaculture farmers to improve their productivity and market connectivity through artificial intelligence, IoT and satellite remote sensing. The firm’s e-bidding platform helps farmers sell their produce directly to buyers, thereby clearing the middlemen. Aquaconnect’s omnichannel marketplace allows aquaculture farmers to transact with hatcheries, feed producers, farm equipment manufacturers, quality laboratories, financial institutions, seafood buyers, processors, exporters and certifying bodies.

Another start-up FreshToHome delivers fresh fish and meat products, which is acquired directly from the local producers and thereby, cut out the middlemen. FreshToHome has ~400,000 customers spread across 10 large cities in India and the UAE, interfacing with 1,500 Indian fishermen and delivers over 1.5 million orders a month. The company is planning to
expand its operations to 56 cities in the country and foray into Saudi Arabia in the next 1-2 years. The company has a contract farming platform facilitating 2,500 tonnes of fish and ~25,000 tonnes of poultry annually. FreshToHome recently raised US$ 121 million.

Many other start-ups such as TenderCuts, Licious and Zappfresh are directly working with fishermen and poultry owners to supply fresh produce. These start-ups have also received attractive funding from investors. Also, investors are keen on investing in start-ups that would address the growing needs of the cold chain dependent sectors. This further helps the fishermen in fetching a fair price for their produce.

**Ornamental Fisheries**

The PMMSY has highlighted few areas of aquaculture—that have untapped potential—such as seaweed farming, ornamental fisheries, cage culture in open sea and reservoirs. In India, there are several attractive ornamental fishes, which can be easily bred and reared. Aquariums and ornamental fishes are considered as a lucrative business and are the star product of pet markets. Ornamental fishes are bred in marine, freshwater, cold water and brackish water. Indian ornamental fish has great demand in the international market. India has ~5,000 production units in West Bengal (55%), Tamil Nadu (30%), Kerala (5%), Maharashtra and others (7%) and North East & Island (3%).

The government is supporting ornamental fish breeding business through various schemes. In February 2021, ICAR-Central Institute of Freshwater Aquaculture, Odisha, inaugurated Ornamental Fish Farmer Field School, a unique school established by a group of ICAR-CIFA Scientists for imparting and sharing techniques to rear ornamental fish culture. The school envisages empowering >500 ornamental fish farmers in 20 nearby villages of North Bengal contributing greatly to extension and advisory services delivery.

The government’s flagship PMMSY scheme has a separate section to promote ornamental fisheries business. Under the PMMSY scheme, ~Rs. 576 crore (US$ 79.63 million) investment was allocated towards the ornamental fishing sector. Some of the key initiatives with costing are listed below:

<table>
<thead>
<tr>
<th>Activities</th>
<th>Unit Cost (Rs. lakh)</th>
<th>Quantity</th>
<th>Total Cost (Rs. in Crore)</th>
<th>Total Cost (US$ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backyard ornamental fish rearing unit (marine and freshwater)</td>
<td>3</td>
<td>1010</td>
<td>30.30</td>
<td>4.19</td>
</tr>
<tr>
<td>Medium scale ornamental fish rearing unit (marine and freshwater)</td>
<td>8</td>
<td>707</td>
<td>56.56</td>
<td>7.82</td>
</tr>
<tr>
<td>Integrated ornamental fish unit (breeding and rearing for freshwater fish)</td>
<td>25</td>
<td>404</td>
<td>101</td>
<td>13.96</td>
</tr>
<tr>
<td>Integrated ornamental fish unit (breeding and rearing for marine fish)</td>
<td>30</td>
<td>303</td>
<td>90.90</td>
<td>12.57</td>
</tr>
<tr>
<td>Establishment of freshwater ornamental fish brood bank</td>
<td>100</td>
<td>10</td>
<td>10</td>
<td>1.38</td>
</tr>
</tbody>
</table>

**Cage culture farming**

In 2005, sea cage farming was introduced in India by the Central Marine Fisheries Research Institute (CMFRI), in collaboration the Ministry of Agriculture and the National Fisheries Development Board (NFDB), in Andhra Pradesh. In cage aquaculture, fishes are reared in floating net pens, which use existing water but enclose the fish in a cage that allows water to pass freely between the fishes and the pond. Cages are used to culture several types of shellfish, finfish and seaweed; and also, undertake crab fattening, lobster fattening in fresh, brackish and marine waters. Some of the very prominent benefits of sea
cage farming are for those who do not have a land to farm fish; they can use the sea. Also, sea cage farming does not require the use of boats and related equipments. Secondly, the produce can be stocked live in the water and sold off when the order is received, thus saving on cold storage costs.

Dr. Shubhadeep Ghosh, principal scientist with the ICAR-CMFRI, highlighted that the production in cage farming stands at 25-30 kg. per cubic metre, compared with only 0.5-1 kg. in ponds. He estimates that currently India has ~3,200 marine cages, which produce ~4,500 tonnes annually, with the main species being Indian pompano, cobia and Asian sea bass.

The CMFRI has projected that even if only 1% of India’s inshore waters were used for cage farming, a produce of 3.2 million tonnes would be attained with ~820,000 cages. The Department of Fisheries, under PMMSY, promotes sea cage farming as an extended practice of mariculture. Listed below are the cage aquaculture activities that are financed by the government up to the cost mentioned. Interested fish farmers can avail subsidies for constructing sea cages on the unit cost of Rs. 3-5 lakh per cage.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Unit Cost (Rs. lakh)</th>
<th>Unit Cost (US$000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of open sea cages (100-120 cubic meter volume)</td>
<td>5</td>
<td>6.91</td>
</tr>
<tr>
<td>Establishment of cages in cold water regions</td>
<td>5</td>
<td>6.91</td>
</tr>
<tr>
<td>Installation of cages in reservoirs</td>
<td>3</td>
<td>4.15</td>
</tr>
</tbody>
</table>

**Seaweed cultivation**

Seaweeds form an important part of aquaculture and are non-flowering marine algae, which play a key role in balancing the marine ecosystems. Large seaweeds act as underwater nurseries for fishes, snails and sea urchins. India has ~60 common seaweed species, but only a few are being exploited on a small scale. In Jan. 2021, Fisheries Secretary Rajiv Ranjan spoke about seaweed cultivation in India during an event related to entrepreneurship development on seaweed business. He stated that in the next five years, India aims to increase its seaweed production to 11.5 lakh tonnes from the current production 2,500 tonnes and this target can be achieved by using just 1% of its 8,000-km.-long coastline. Currently, Tamil Nadu and Gujarat are the key cultivators of seaweeds.

He highlighted that seaweed cultivation requires less capital investment and holds an important component of the PMMSY agenda. The government has allocated Rs. 640 crore (US$ 87.37 million) for developing seaweed industry in the country, per unit cost, that are mentioned below:

<table>
<thead>
<tr>
<th>Activities</th>
<th>Unit Cost (Rs.)</th>
<th>Unit Cost (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of seaweed culture rafts including inputs (per raft)</td>
<td>1500</td>
<td>20.48</td>
</tr>
<tr>
<td>Establishment of seaweed culture with Monoline/tubenet method including inputs (one unit is = 15 ropes of 25-meter length)</td>
<td>8000</td>
<td>109.22</td>
</tr>
</tbody>
</table>

As part of the Budget 2021 speech, Finance Minister Nirmala Sitharaman announced of a multipurpose seaweed park that will be established in Tamil Nadu to promote seaweed farming and cultivation. She stated that seaweed farming is an emerging sector with a potential to provide large scale employment for coastal communities.

**Technology seeping into the sector**

Considerable effort has been made in the aquaculture sector to develop economically viable technologies that will support the sector and increase livelihood opportunities.
**E-Gopala app – A brainchild of PMMSY**
In September 2020, the government launched e-Gopala app that aims to help farmers who are into agriculture and aquaculture. The app updates farmers on various aspects of the produce by eliminating middlemen from the process. During the launch of the app, Prime Minister Narendra Modi said, “People engaged in pisciculture will benefit largely from this scheme. It is our aim that in the next 3-4 years we double our production and give fisheries sector a boost.” The app will provide all information related to productivity, health and diet for animals.

**Technology in fish culturing**
The PMMSY proposes adoption of technologies for production and post-harvest management of the fish culture process. High-density fish farming in ponds, recirculatory aquaculture system (RAS), biofloc technology (BFT), aquaponics, cage culture, nano-feed, live feed technology and blockchain are gaining importance on account of the government’s burgeoning interest into the sector.

**Modernising educational institutions and training fishermen**
In February 2020, the College of Fisheries announced plans to modernise its 22-acre aquaculture farm at an estimated cost of Rs. 7.9 crore (US$ 1.08 million) under the Rashtriya Krishi Vikas Yojana (RKVY). The college will use artificial intelligence (AI) techniques to develop its aquaculture units. Professor and Dean A. Senthil Vel revealed that these upgrades will be in partnership with the National Institute of Technology-Karnataka (NITK); this will be a first-of-its-kind collaboration in the country between a premier engineering institute and the fisheries sector.

The PMMSY provides special focus for training and capacity building of those involved in aquaculture—fishermen, entrepreneurs, fish vendors and fishery officials. An amount of Rs. 100 crore (US$ 13.65 million) is earmarked to train ~1.5 lakh beneficiaries under the PMMSY. The programme will educate beneficiaries on the adoption of technologies and modern methods of fish cultivation through consultation with fisheries research institutes of ICAR and fisheries universities and domain experts. Collaborations with the national and international universities and research institutes will be considered to obtain the latest technologies in fisheries including skill development to adopt such technologies.

**The Road Ahead**
The Indian aquaculture industry has grown six-fold in the past two decades. While India holds a strong stand in the global aquaculture race, the industry is yet to overcome several infrastructure and technological challenges to scale the supply.

The Food and Agriculture Organisation (FAO) reveals that ~90% of the global fish reserves have been fully exploited to the extent that recovery may not be biologically possible. India uses only ~40% of the available ponds, tanks and other water bodies for freshwater aquaculture and 15% of the total potential of brackish water resources. India’s long coastline can strengthen the economy to meet objectives of the Blue Revolution.

Advancements in the aquaculture industry have already started reaching new horizons. The government is aiming to turn India into a hotspot for fish production through appropriate policies, marketing and infrastructure support. Disruptive start-ups, coupled with a quench from the government to boost the sector, is transforming the industry with innovative solutions. This presents a great opportunity for investors to invest their resources in a sector with immense growth potential. Considering the technological advancements made over the years and numerous government schemes to boost aquaculture, it is possible to make this sector as popular as agriculture, with even more profitability.