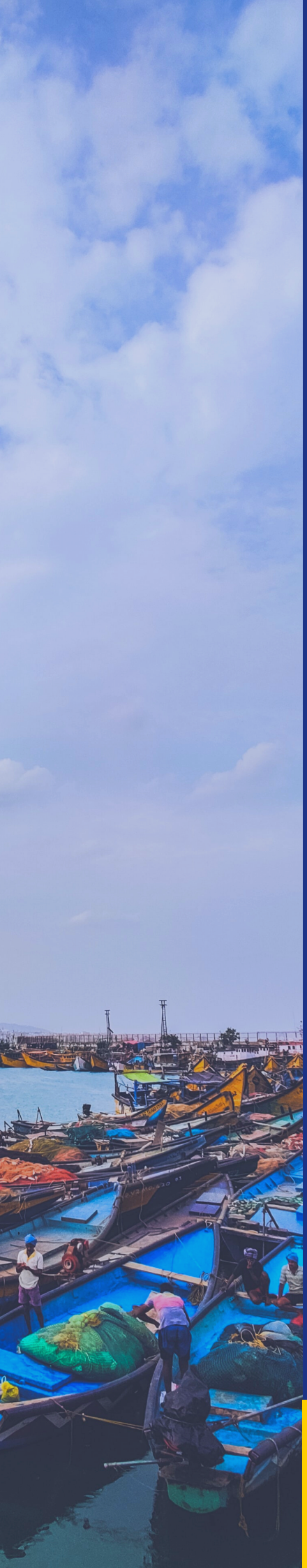

SEPTEMBER 2020

Towards Strengthening Blue Economy for Fishing Communities

Equity in climate and sustainability action

A CASE STUDY BY

Myron Mendes

INECC
Laya
BLUCATCH
Our Fish. Our Future.
numer8

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THE BACKGROUND AND CONTEXT

The lockdown announced by Prime Minister Narendra Modi on March 24, to control the spread of the coronavirus, left many, especially those in the marginalised sectors, without any means to arrange for their daily survival. There were hundreds of fishers reaching the coast on March 24 when the lockdown was announced, suspending all activities. Since fish or meat didn't fall into essential commodities when the lockdown began, none of the fishers were allowed to get fish at the port for sale by the authorities. Across the coast of Maharashtra almost 15000 tons of fish worth roughly 200 crores had to be dumped back into the ocean because of a lack of planning, communication, and action from the local authorities, along with unavailability of labour and ice. With the annual fishing ban season less than two months away the fisherfolk had no clue what they would do for the next couple of months or how they would survive.

On March 31, the Centre announced that fishermen across the country will be compensated for their losses during the lockdown through direct transfer to bank accounts. But since the community has never before been offered such an aid, there is no such comprehensive database with account details. While this situation was unfolding in the fishing community, people in Mumbai missed cooking fresh fish during the early days of the lockdown. The entire fresh seafood supply chain had collapsed.

THE OBJECTIVE

Determined to address the crisis of the small-scaled fisherfolk as well as to address the lack of fresh seafood in the city three individuals came together. Ganesh Nakhawa from BluCatch, Devleena Bhattacharjee from OFish and Myron Mendes from INECC-LAYA. On 1st April, 10 days into the lockdown, Ganesh Nakhawa was sitting down to a lunch of fish curry and rice, and sent a picture to Myron in Mumbai. 'You should sell these in the city. We have no fish here,' was his response to the chat. Myron got permission from his housing society to coordinate orders and connected with other housing societies to offer fresh fish straight from the fisherman. With an order for approximately 37 kgs the first day of fish including tuna, yellow trevally, red snapper, and squids, that sold out in one location in Andheri east. The same consumers with their friends and relatives from the area came back in two days demanding for more fresh fish. This was the beginning of the lockdown response to the fishy situation.

By the first week of April, this demand had managed to get some fishers back to the sea. The entire supply chain had to be fixed as distributors weren't available and hence the sale of catch to people directly. Relying on the distributors would also mean that the fishers would have to wait to get money, whereas they were in an urgent need of money, he added.

This response has led to a continuous engagement over the last 3 months with fisherfolk, direct consumers, bulk buyers, restaurant owners, exporters, and retailers.

THE INITIATIVE

To meet the challenge of sustainable development, INECC has been working to foster more sustainable and responsible levels and patterns of consumption among urban citizens. There is a significant opportunity to help consumers choose and use their food, goods and services sustainably. The network understands that education and awareness is one of the most powerful tools to support us in making the right and more responsible choices while meeting our needs and aspirations. The engagement with citizens aims to empower individuals and social groups with appropriate information on the impacts of their daily choices as consumers, as well as to create workable solutions and alternatives by:

- Understanding drivers of consumption
- Understanding consumption patterns and drivers
- Understanding the role of the consumer
- Understanding the role of businesses
- Understanding the challenges and looking for alternatives

It is through one of these workshops that INECC was introduced to Ganesh Nakhawa, a small-scaled koli fisherman, living in Karanja and member of Karanja Fishing Cooperative Society in Raigad. He is also the founder of BluCatch and was very upset when the lockdown started. The fishing community was left behind in the scheme of things to provide relief for. The previous fishing season was a washout because of cyclones and fisherfolk had just returned with their first catch of this season when the lockdown came into force.

With ice processing factories being shut down and no ice available the entire catch had to be dumped back into the ocean. This also led to advocating for fish to be included in the essential commodity category which was not the case in the beginning of the lockdown.

The team on the streets of Mumbai using their phones to coordinate orders during the early days of the lockdown

Scrambling for solutions in late March, the Karanja Fishing Co-operative attempted to set up a market in the village to sell the salvaged catch of a few boats. Police permissions were sought, social distancing circles were set up but the crowd was just too much and the sales had to shut. It was after this incident that Nakhawa secured an essential services pass so that he could travel to Mumbai.

This intervention has led to a partnership with Numer8, founded by Devleena Bhaattacharjee, which is a data analytics company that specialises in using geospatial data to address problems like disaster management, coastal community monitoring, infrastructure monitoring, wildlife, and biodiversity protection. Numer8 is also helping the fishing communities to tackle changes to the fishing habitat, be safer at the seas, save in the cost of operations and come home with a better catch.The three of them started off by encouraging fishermen to go out with their boats while creating a market for the catch in Mumbai and among wholesale buyers. The team began with zero logistics and facilities.

Ganesh used his house at karanja as the location for the seafood to be sorted, cut, cleaned and packed as soon as the catch arrived from the boats. The packets were then put in his car to be transported to Mumbai. In Mumbai, pre orders would be taken the night before through a network of whatsapp groups and phone calls. In the beginning this system needed coordination between Mumbai and Karanja to make sure that the stock tallied with the orders. This went on for a couple of weeks while there was an exponential rise in customers as the news began to spread.

Ganesh Nakhawa's car turned into a delivery vehicle during the first phase of the lockdown.

By the end of April the team was able to sell fish on a regular basis to B2C and B2B customers combined. The delivery of the seafood would happen in a stocked up car.

THE FISHERFOLK

As days went by, the team was able to operate with the help of 68 fishing boats that directly impacted 680 fishermen and 30 fisher women. The women folk were employed to clean, weigh and pack the seafood for pre-orders taken the previous evening. It is important to note that due to the lack of manpower and logistics during the lockdown sales were not happening daily. However, the fishing community were encouraged to take their boats out as they were assured of sale of their catch. The main reason for this assurance was that payment was being made immediately to them the next evening after the sales. When the fisherfolk are paid immediately they are able to plan the next trip immediately.

BUSINESS TO CONSUMER

B2C refers to commerce between a business and an individual consumer. In the month of April starting with 13 customers, word spread via Instagram and Social media that fresh fish was being made available in Mumbai by BluCatch. The team saw a rapid increase in the number of phone calls, whatsapp messages and social media dm's requesting to deliver to locations across the city. The social media posts also caught the eye of celebrities and influencers, chefs for celebrities, celebrity chefs. The availability of fresh seafood also caught the eye of home chefs and restaurant owners across the city who were looking to adapt their business in the lockdown.

fishName	TotalQty
Black Pomfret	1.00
Bombay Duck	38.00
Chaiti Prawns	47.70
Grey Pomfret	108.75
Grouper	8.60
Indian Red Salmon	6.00
Koli Masala	2.00
Lobster	2.00
Mackerel	21.00
Mandeli	16.00
Mud Crab	23.63
Seabass	83.30
Squids	52.00
White Pomfret	93.35
White Prawns	317.10
White Tiger Prawns	2.00
Total	**822.43**

For the month of May the team was able to make accessible 822 kgs of seafood for the consumers of Mumbai. The image on the left shows the variety of seafood sold in the month of May directly to the consumers in Mumbai.

The model that was followed in the beginning was to get intelligence on what catch and what quantity was coming the next morning by coordinating with the fishing boats and fishermen at Karanja. The list would go out to whatsapp groups that were created and people would place their orders individually to the person coordinating in Andheri East. The idea was to make sure that no seafood was wasted as this would incur losses to the fisherfolk.

The timings of the boat landings and docking depended on the tide. Boats were able to dock only when the tide was conducive. Upon docking (Mostly early morning) the stock would be taken to Ganesh Nakhawa's residence where women from the community were employed to sort, clean, and package the previous night's orders. The process had to be quick because there was limited ice available. Once the orders were placed in the vehicle. Ganesh would contact Myron and let him know that he was on his way to Mumbai, which is about 51 kms away, with the seafood. The roads being desolate because of the lockdown reduced the journey time to 50 minutes as opposed to the usual three hours. The customers in Andheri East were then intimated of a time when the vehicle would reach their location. The customers would then collect their order, make their payment via cash or phone app and the vehicle would then move to the next location.

As the days went by and the news spread the number of customers within the locality increased as well. People who hadn't ordered and had seen the vehicle would also step out of their homes to enquire and pick up seafood. This meant that extra fish had to be carried along as well to make the availability of seafood more accessible.

With the amount of orders and requests, a new strategy had to be thought of. The vehicle was not able to handle the load of the fish. And a new alternative had to be sought. With great difficulty, the team was able to find a driver with a tempo that was willing to transport the fresh seafood from karanja to Mumbai as well as make stops to the various locations.

With the amount of orders and requests, a new strategy had to be thought of. The vehicle was not able to handle the load of the fish. And a new alternative had to be sought. With great difficulty, the team was able to find a driver with a tempo that was willing to transport the fresh seafood from karanja to Mumbai as well as make stops to the various locations. This opened up an opportunity of bringing into the city more seafood and sending out more fishing boats out to sea. The tempo was now able to travel all over Mumbai and that's exactly what happened. The tempo would make pre-planned stops to various locations from Andheri East, Andheri West, Juhu, Malad West, Borivali West, Bandra West, Santacruz East and Dadar West. People would be informed via instagram and whatsapp regarding the details.

Residents of Ashok Nagar, Marol maintaining social distancing while awaiting a midnight pick up of fresh seafood.

The main concern during this time was that the seafood should not remain unsold as this would lead to wastage and loss for the fisherfolk. In the event that there was any stock remaining, the team would call up societies in other locations to let them know that there was availability of fresh seafood. The team was able to make sales even till 2 in the morning. In the pic, you can see customers coming down at midnight to buy fish. As the days passed doing deliveries via the temp even though it was reaching to more customers was proving to be inefficient. Navigating

the streets of Mumbai needed to be sped up since they were dealing with perishable items. The idea of having the seafood delivered via bike couriers was looked into. Due to non-essential e-commerce delivery being shut, many of the bike couriers were without an income. The team approached 10 such bikers and tied up with them to deliver the seafood directly to the doorsteps of the consumers. Without having a facility in place, the tempo would reach Andheri East with the available catch that was pre-packed at Karanja. It was from the tempo that the orders were dispatched via the bike couriers to Colaba all the way to Dahisar. The system used to take orders and dispatch them was happening via the phone. Each rider was handling anywhere between 10 to 17 orders for delivery.

As the lockdown began to ease by the end of May, it was evident that if the fish was going to be made more accessible to more people while more fishermen were being onboarded a more efficient system was needed. The team decided to rent a space in the middle of the lockdown to make the dispatch process less cumbersome and more productive. The rented space has made it possible to use laptops, weigh the fish, take customized orders, prepare invoices, properly pack the delivery bags, and take a stock count every hour. Currently from the rented facility the team is able to dispatch on average 100 deliveries whenever fresh catch is available. The rented facility has also helped employ 5 more people to the team that handle orders and dispatches.

BUSINESS TO BUSINESS

Business-to-business (B2B) is a form of transaction between 2 businesses, such as one involving a producer or manufacturer and wholesaler, or a producer and a retailer. In this case the producer or supplier has been BluCatch. During the lockdown all the seafood suppliers closed down their businesses and abandoned the fishing community. This meant that large scale sale of seafood was brought to a stand still. And there were no takers to buy the catch from the fishing community. The suppliers account for almost 80 percent of the purchases made from the community. The suppliers then sell to e-commerce players and large retail chains at a higher price and are assured fatter commissions. All this while the fishing communities haven't received their payment for the catch purchased. It takes more than 60 days to 6 months for payments to be cleared by the suppliers. This hampers the boats going out for the next trip as the boat owners need cash to prep for supplies and provisions.

fishName	TotalQty
Bhushi Prawns	336.00
Black Pomfret	5.00
Black Tiger Prawns	27.00
Bombay Duck	130.90
Chaiti Prawns	1,148.00
Grey Pomfret	60.59
Indian Salmon	79.00
Koli Masala	1.00
Lobster	15.18
Mackerel	640.00
Mandeli	213.00
Mud Crab	4.50
Ribbon Fish	25.00
Seabass	293.70
Squids	84.40
White Pomfret	1,030.52
White Prawns	616.50
White Tiger Prawns	163.00
Total	**4,879.89**

In the month of April, Numer8, the data analytics company run by Devleena got in touch with Ganesh Nakhawa to see how they could assist with the supply chain management through the app. Knowing full well that logistics and availability of ice was an issue, they set out to get in touch with e-commerce and large retailers to sell fresh

seafood to them.

In the month of April they were able to sell 2669.45 Kgs of seafood to them and were able to make payments to the fishing community as soon as the payments were received. In May, the total amount of seafood sold to these players was 4879 kgs. The image shows the total quantity of seafood sold to the B2B players in the month of May.

SEAFOOD SUSTAINABILITY AND TRACEABILITY

Oceans face the threats of marine and nutrient pollution, resource depletion and climate change, all of which are caused primarily by human actions. These threats place further pressure on environmental systems, like biodiversity and natural infrastructure, while creating socio-economic problems, including health, safety and financial risks. Climate change has brought monumental shifts in weather patterns, fishing zones and migration of fish population to different areas. The phenomenon has impacted the source of livelihood for many in coastal India pushing them to turn to technological assistance to practice sustainability.

Sustainable Development Goal 14 calls for interventions to conserve and sustainably use the oceans, seas and marine resources for sustainable development. The goal also calls to locally and contextually address:

- Reducing marine pollution
- Protecting marine and coastal ecosystems
- The impacts of ocean acidification
- Regulating ocean harvesting and ending overfishing
- Conserving at least 10% of coastal and marine areas
- Creating sustainable fishing communities and livelihoods

Devleena and her company Numer8 have analysed changes in the cyclical pattern of potential fishing zones in 2018. It found that nearshore fishing zones had drifted away further into the deeper seas.

It also analysed the coastal vulnerability index for Kerala and Odisha post-2018 Kerala cyclone and Cyclone Fani in 2019. Following this, it developed an app, 'OFish', which provides fishermen with weather updates, helps them identify fishing zones and ensure that government guidelines on fishing are practiced. The technology helps fishermen on the sea as well as on the coast.

According to Devleena, "About 170 million people in India are at the forefront of climate change and experience sea-level rise, tropical cyclones and storms, according to a United Nations report. The latest cases being of the Cyclone Amphan in Bay of Bengal and Cyclone Nisraga in the Arabian Sea."

"Think of it like a Google Map for fishing. A fisherman opens the app before he goes out to fish and the platform shows him fishing zones near his chosen port," says Nandhini Karthikeyan, chief technical officer at Numer8. The high-precision marine and ocean data helps them to venture in safer areas of the sea. Every trip made by a fisherman and its details can be recorded in the app, allowing traceability to the end customers. Once the fishermen reach the shore, the aggregator helps him sell fish directly to buyers, earn a higher sales margin and realise faster payments.

The firm enables marine and port authorities in India and Sri Lanka to monitor overfishing and unregulated fishing in the Indian coasts. It is currently working with fishermen in Maharashtra and Kerala in India.

They build their work on the 11 climate factors identified by the International Collective in Support of Fishworkers (ICSF). These are:

- Sea level
- Sea surface temperature
- Sea surface salinity
- Wind patterns
- Seasonality and seasonal patterns
- Rainfall
- Natural disasters
- Waves and currents
- Tidal action
- Mud flows and turbidity
- Shoreline changes

“The above elements — combined with pollution, increase in number of fishing boats, unregulated means of fishing and a highly unorganised fishing sector — has led to a decline in fisheries through the years.” says Karthikeyan.

The three-key findings from their research and analysis are:

1. Fishermen spent more time finding fish, they invested more fuel, and got exposed to unpredictable weather conditions.
2. Fishermen have abject sales margins and have to navigate through middlemen.
3. They have no institutional credits to apply to for formal operational loans and fall prey to high-interest through informal loans.

The company has analysed geospatial data for over 10 parameters in building their ocean models to provide higher precision weather data for tides, the height of waves, wind direction, wind speed and various other marine weather updates. The supply chain monitoring

and seafood traceability features use a blockchain as a backend to provide end-to-end data transparency. This provides transparent and real-time insights into movements of the product and creates a more responsible and collaborative approach to trade that reduces costs and time. In the near future, every seafood consumer from BluCatch will be made aware of the source of their catch.

The technology has already helped Indian and Sri Lankan fisherfolk to decrease their operational cost by four per cent and increase their sales margin by 10 percent.

Fishermen loading catch details in the app while still at sea.

Further, the mobile phone app generates a QR code for every consumer and provides complete information about the fishermen who managed the catch. The app also helps the fisherfolk to find a market to sell the catch without the need for a middleman. This assures a higher sales margin and a faster payment realisation to the community. The traceability feature gets extended to provide ocean authorities with details of fishing and non-fishing boats in the sea on their mobile phones.

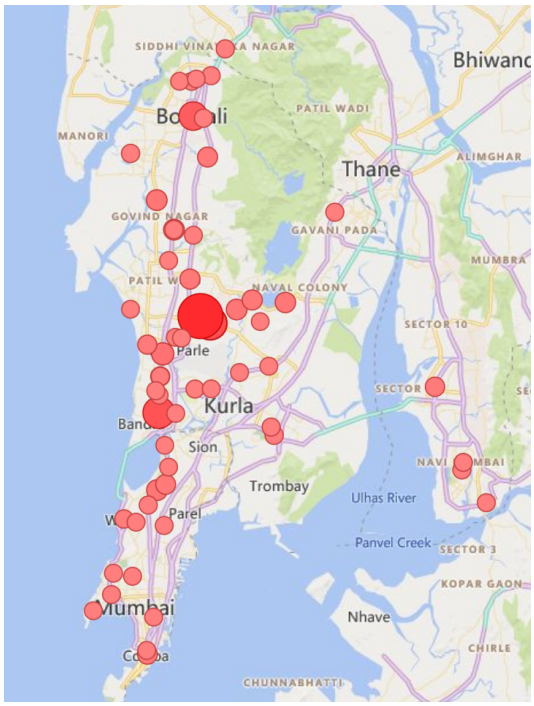
OUTREACH ANALYSIS

Fisherfolk

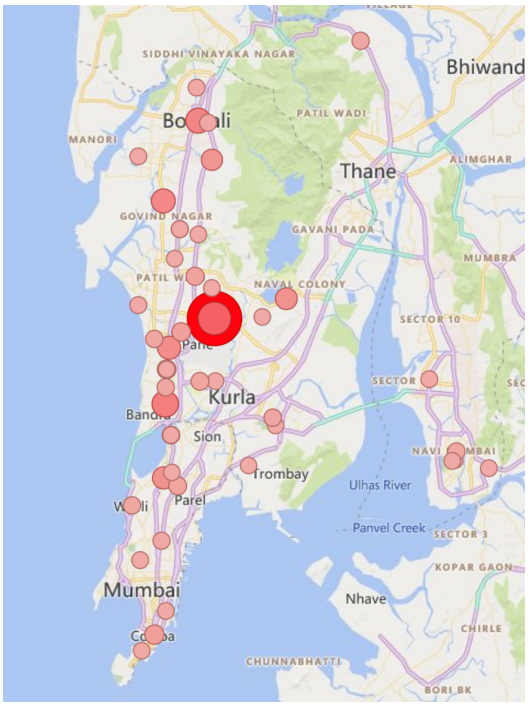
In the months of April, May and June the team has been able to track and monitor 68 boat owners and their crew. They hail from Karanja, Alibaug, Mora and Colaba jettys. These boat owners in turn are able to impact 680 fishermen and their families.

B2C consumers

B2C consumer sales for the month of May and June in Mumbai can be seen below:



Sales by location in Mumbai for the month of May with 640 customers.



Sales by location in Mumbai for the month of June with 670 customers.

Trend of fish sales for B2C customers in Mumbai

fishName	TotalQty
White Prawns	317.10
Grey Pomfret	108.75
White Pomfret	93.35
Seabass	83.30
Squids	52.00
Chaiti Prawns	47.70
Bombay Duck	38.00
Mud Crab	23.63
Mackerel	21.00
Mandeli	16.00
Grouper	8.60
Indian Red Salmon	6.00
Koli Masala	2.00
Lobster	2.00
White Tiger Prawns	2.00
Black Pomfret	1.00
Total	**822.43**

Sales of seafood in Mumbai for the month of May with 640 customers in kgs.

fishName	TotalQty
Mud Crab	134.15
White Prawns Kapsi	111.00
White Pomfret	86.40
Squids	83.95
Indian Red Salmon	76.14
Seabass	67.00
Grey Pomfret	60.58
Bombay Duck	51.62
Grunter	25.88
Chaiti Prawns	25.00
Oyster	25.00
Black Tiger Prawns	19.84
Soft Blue Crabs	15.00
Cobia	12.70
Golden Croaker	10.85
White Prawns	10.56
Chappal Fish	7.21
Koli Masala	6.50
Bengal Corvina Croaker	3.50
Mackerel	3.20
Red Snapper	3.05
Gaboli	2.00
Shark	2.00
Total	**844.13**

Sales of seafood in Mumbai for the month of June with 670 customers in kgs.

At BluCatch, consumers are encouraged to eat seafood that is locally sourced, seasonal and sustainable.There is an entire educational campaign with the clients of Blucatch that introduces the three aspects.

- By eating locally sourced fish the consumers are guaranteed of freshness and quality as well as being able to reduce their food carbon footprint when making this choice. The traceability of the Ofish app gives the consumer the choice to buy locally sourced seafood.
- Every fish has a breeding and migration season. One has to be sensitive to these breeding and migration patterns of different seafood. The seafood sold in the above months were the fish of the season. It is important to note that most of the consumers had not ventured out of eating the popular elite fish like white pomfrets, surmai, rawas and halwa.

Introducing the Leather Jacket (Chappal fish) to the consumers. A cheaper and more sustainable alternative to the pomfret.

A home chef introducing Cobia in her menu for the first time.

- In the beginning there was a huge demand for these four fish. The team began to introduce seasonal fish like Barramundi (Indian Seabass), Grunter, Leather Jacket (Chappal), Cobia and groupers to the market. Many consumers had never tried these fish before. The reason that many of these fish were available during this time is because the export market has been shut down due to the lockdown. These locally sourced fish rarely make it to the fish market and people's plates because there is no awareness or knowledge of such fish and how to cook them. "We care for the fishers and we care more for the fish. We have ensured that the fish doesn't loose its value. We bluntly tell customers that the same way they cannot expect strawberries in summer, it is wrong to expect a particular fish that's odd for the season," says Ganesh Nakhawa. The team tied up with home chefs to experiment with various recipes and posted on instagram to create an interest in the local seasonal fish available.
- The idea of sustainability looks holistically at the entire supply chain. Right from the way the seafood is sourced. With respect to how they are caught? What

kinds of nets are used? What kinds of boats are used? Is the catch being regulated? How mature are the fish that are caught? How are the fisherfolk being educated on sustainability?

Sustainability also means addressing the livelihood from the same lens. Is the community being offered a fair price? Are they being paid within a proper time limit? Are they being encouraged to handle and store the fish using proper practices?

INSIGHTS INTO THE MODEL

Low-carbon emission perspective for resilience building

Overexploitation of natural resources by human beings is one of the greatest pressures affecting the structure and functioning of marine ecosystems over short-time scales. Short-term weather changes and climate change also impact the marine ecosystem.

According to the Food and Agriculture Organization, the changing climatic conditions contribute to ocean warming, rising sea levels, increased extreme weather events, and changes in the chemical makeup of the aquatic environment that impact the world's fisheries and aquaculture sector.

To ensure sustainable practices the team has worked to bring sustainability and traceability in the fishing industry. These practices will help solve problems faced by two sides of the ecosystem, the fishers and the fish. For small-scale fishers to get a good catch, they need the help of weather safety guidelines and intelligence of where exactly to fetch.

Climate change and heavy industrialisation has disturbed the fish pattern with lesser catch and rough weather, resulting in the fishing community having to spend more time at sea. By burning more fuel, the operating costs have skyrocketed. Along with providing fishers with vital weather information, the team also collects data about the fish caught, the fishing zones, the owner of the boats and

teaches them to use the right net sizes as prescribed by the government. They emphasise that fish should be allowed to breed at least once in their lifetime before they are caught. The team doesn't encourage the catch and sale of juvenile fish.

Since the details of the catch location and methods along with registered fishers are known, they are being shared with the customers. The team provides a QR Code on the invoice sold that displays information on the time where the fish was caught, the location, the fisherman and the boat.

"If we educate the customer, it will change their mindset to take fish from proximity and not from the Indian Ocean or any distant waterbody. At present, the customers don't know where the prawns come from, where they were

caught and the freshness aspect of it.” says Devleena Bhattacharjee.

Climate change is affecting the fish population and causing fish to change their natural residing location. The fish species are migrating northwards while some species show the southward trend of the Arabian Sea in search of cooler areas. The major reason behind migration is the stress caused by industrial fishing practices owing to the absence of sustainable practices and climate change is only adding to it. Because of increasing demand, more popular fish are caught even before they mature and hence there is a dire need for sustainable practices to evolve soon.

The importance of education and awareness

The team has spent hours on interviews, on education platforms, on the radio, on news channels, and on social media to create awareness of this kind of a model that encourages locally sourced, sustainable and traceable seafood. They are beginning to see trends in their sales for fish that would not otherwise be consumed in Mumbai. As well as customers coming back to buy the same fish again. The idea of being able to trace their seafood purchase has piqued the interest of most of their consumers. They understand that there has to be a holistic approach to creating a sustainable supply chain. Education and awareness has to happen at all levels of the supply chain. From the fishermen, their communities, their workers, the value added service providers, the suppliers, the retailers, policy makers, and their customers. The level and strategy of engagement for each of these stakeholders is different and their approach for each of them is different.

CHALLENGES, LIMITATIONS AND LESSONS LEARNED

The team responded to the challenge the fishing community faced in the early days of the lockdown. The lockdown itself was a challenge for the team in the beginning.

- Finding labour
- Access to packaging
- Curfew restrictions
- Initial access to capital
- Zero infrastructure

As the lockdown eased other challenges arose:

- Traffic on the streets
- Uncertainty of what the new lockdown rules are going to be
- Limited capital to scale the model to reach out to more consumers and onboard more fishermen

As it is with all businesses, there is a BAU lobby of suppliers that are constantly trying to upturn the way the model is working. But the fishing community has understood and acknowledged who has stood by them during their time of need and are willing to work with the team as they have been **able to reduce their operational costs by 4 times, increase their sales margin by 10% and get payment faster over the past few months.**

WHAT WORKED FOR THE TEAM TO MAKE THIS HAPPEN?

The team, coming from different backgrounds, have the same thought process. They understand that things need to change to create responsible producers and responsible consumers. They look at this model through the PPP lens. People, Planet and Profit. Speaking about sustainability and responsible production and consumption has caught the attention of many of their buyers. The idea that seafood can also be traced like fruits and vegetables is something that consumers have not heard about before.

SUSTAINABILITY OF THIS BUSINESS MODEL AND THE WAY FORWARD

There is definitely a need to scale this model up. Very few fish suppliers are able to maintain the quality of fish before it reaches the consumer. The current BAU model is to blame. By the time the seafood reaches the consumer it has passed through at least 6 different points in the supply chain thereby subjecting it to temperature shock and bad handling methods. The model of BluCatch has reduced the number of touchpoints for the seafood to reach the consumer.

The model continues to work during the extended lockdown. But for this to sustain after the lockdown there is a need for capital investment for infrastructure to clean, process, package and dispatch the fresh seafood to distribution centers within a few hours.

There also has to be rolling capital to support the B2B buyers as their payments tend to be delayed. If fishermen need to be paid faster to plan their next trip then capital needs to be made available to them.

Policy intervention is needed for large-scale traceability to be applied by all those dealing with seafood. Studies show that consumers aren't willing to spend much on the traceability of their food. This will have to be borne by the central and state governments. Policy should also be made conducive for the next generation of indigenous fishing communities to find it lucrative. Currently, most of the

policies and trends are geared towards aquaculture and fish farming which has proven to be unsustainable and energy intensive.

Going forward, the team aspires to address the issues that they have always cared about in a more holistic and systemic way. Which are:

- Respect for local traditions
- Equity and inclusivity
- Sustainability and traceability
- Approachability and accessibility

IN THE PRESS

Increasing the net income - Mid Day

HT Salutes: From slim pickings to plum sales, how a fisherman used tech to beat lockdown - Hindustan Times

Jobs for 600 with 3,000 kg fish sold direct-to-home - Mumbai Mirror

How Mumbai's fishers adapted in the lockdown, kept their sales alive - Mongabay

How a bunch of Mumbai's fishers kept their businesses afloat amid coronavirus lockdown - Scroll

Lockdown deliveries - Sunday Mid Day

How technology is helping Indian, Sri Lankan fishermen amid climate change patterns - Down To Earth

Fishing for sustainability - Sunday Mid Day

Sustainable development is key to enhancing competitiveness in fisheries sector: Fisheries Secretary - Knowledge and News Network

These are the 2 steps Modi govt needs to take for its space reforms to take off - The Print

Space startups use lockdown to hone strategies - The Hindu

Lockdown: How agritech ventures are trying to fix the food supply chain - Forbes India

INECC

The Indian Network on Ethics and Climate Change (INECC) is a national network of organizations and individuals who connect on the issue of climate change from the perspective of marginalized communities.It was formed in 1996 at the initiative of a few development practitioners who saw the link between the climate change crisis and the larger issues of sustainable development and social justice.INECC works to bring climate change and sustainable development concerns of the marginalized majority into policy dialogues.

www.inecc.net ineccinsta inecc1996 inecc inecc2

LAYA

An NGO headquartered in Visakhapatnam, LAYA's larger vision is to empower Adivasi communities through improved self-sustainable living, education, healthcare etc. At the macro level, LAYA collaborates with other organizations and stakeholders to achieve sustainable development particularly in the context of climate change. The threat of climate change is notgender neutral and the Adivasi women in particular are more vulnerable to it as they are highly dependent on local natural resources for their livelihood. The Adivasi regions have an abundance of natural sources that can be leveraged to benefit the inhabitants.LAYA is constantly exploring and introducing climate-friendly, low carbon, low emission technologies, which harness these natural and renewable resources to facilitate the wellbeing of women in these communities. LAYA is the secretariat for The Indian Network On Ethics And Climate Change.

www.laya.org.in laya.org.in laya-resource-center

BLUCATCH

BluCatch started in 2017 as a simple direct seafood supply service that sold seafood straight from the fishing community (Koli/Nakhawa) in Mumbai, India to end consumers.Starting March 2020, in the midst of a global pandemic and national lock-down that exacerbated the failings of our infrastructure and governance, BluCatch began reinventing itself. BluCatch has partnered with Ofish to build a sustainable and traceable seafood supply chain that benefits the environment, the fishing community and the consumers.

www.blucatch.co.in blucatch.seafoods blucatch.seafoods

NUMER8

Numer8 is a big geo-data science company incorporated in April 2018. It is the proud owner of two world-class products recognized and awarded by international organisations. Their approach to data science is to find a large real-life validation of the problem globally. They have pioneered in applying data science to a highly disintegrated domain like fisheries, building an end to end value chain.

www.numer8.in numer8_ofish Ofish numer8

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