BOBP BREEZE

A Quadrimester Newsletter

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Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) is a Regional Fisheries Advisory Body (RFAB) for promoting sustainable fisheries in the Bay of Bengal and associated regions. Its current members are Bangladesh, India, the Maldives, and Sri Lanka. It serves as the think tank on transboundary and contemporary national issues of the member countries concerning fisheries management.

In this issue...

Viewpoint

Dr. P. Krishnan
Director, BOBP

Biodiversity beyond National Jurisdiction (BBNJ) Agreement: A Stich on Time towards Sustainable Marine Fisheries Management

The BBNJ Agreement provides a historic opportunity to address gaps in ocean management by establishing a comprehensive framework for conserving and sustainably using marine biodiversity in ABNJ. Although the deal is not exclusively focused on fisheries, it is expected to aid in ensuring the sustainability of the marine fisheries.
While coastal developing countries are likely to benefit from the proposed Agreement by effective participation in the decision-making process, they also need to prepare for the additional obligations and costs.

The vast expanse of the ocean is home to an extraordinary array of life forms, comprising a delicate balance of ecosystems. However, the relentless pressures of overfishing, pollution, habitat destruction, and climate change have wreaked havoc on these precious environments, leading to biodiversity loss. Marine fisheries, which contributes to the livelihood, food and nutritional security of billions of people, is among the most severely affected sectors.

Managing fisheries in areas beyond national jurisdiction (ABNJ) with the United Nations Convention on Law of the Sea (UNCLOS), as the cornerstone, has some critical voids yet to be filled. These gaps include a clear definition and criteria for identifying straddling and shared stocks, which require special conservation and management measures under the UNCLOS.

Furthermore, there is a pressing need for a comprehensive framework that addresses the conservation and sustainable use of marine biodiversity in ABNJ, encompassing area-based management tools and environmental impact assessments. In addition, the coordination and cooperation mechanisms among regional fishery bodies (RFBs), regional seas conventions, and other international agreements responsible for ABNJ fisheries management need to be improved. Lastly, more adequate compliance and enforcement mechanisms are required to ensure that the States and other relevant actors fulfil their obligations under UNCLOS, to sustain ABNJ fisheries.

To address these pressing challenges, the proposed BBNJ agreement has emerged as a beacon of hope. While the BBNJ agreement is not explicitly focused on fisheries, its implications for ABNJ fisheries management are significant.

The BBNJ agreement is an international legally binding instrument under the UNCLOS, which offers a unique opportunity to establish a comprehensive and coherent framework conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction (ABNJ).

BBNJ Agreement encompasses four main topics:

***First,** marine genetic resources provisions focus on benefit sharing and emphasize considering coastal and other states' rights and legitimate interests, while collecting these resources.*

***Second,** area-based management tools involve establishing, implementing, and monitoring marine protected areas and other conservation measures based on reliable scientific information and a precautionary approach.*

***Third,** environmental impact assessments set out obligations and procedures for evaluating the ecological impact of activities that may harm ABNJ marine biodiversity.*

***Finally,** capacity-building and transfer of marine technologies aim to enhance the abilities of states and other actors through training, education, research cooperation, technical assistance, equipment provision, data sharing, and financial support.*

The Agreement is expected to drive the adoption of more precautionary management measures, stricter quotas, and the establishment of new marine protected areas within and beyond national jurisdiction. While these changes may present short-term challenges for the fishing industry, they are crucial for safeguarding the long-term sustainability of marine resources and ensuring the sector's viability. Moreover, it recognizes the primary role and responsibility of states and regional fisheries management organizations (RFMOs) in the conservation and management of fish stocks in ABNJ, and emphasizes the application of an ecosystem approach. This means that the health of the entire ecosystem and the potential impacts of fishing activities on non-target species and habitats must be considered when making management decisions.

Like other international agreements, the draft BBNJ agreement also has implications for developed and developing countries. On the positive side, the Agreement facilitates these countries to participate in and influence the decision-making and implementation processes regarding the conservation and sustainable use of marine biodiversity in ABNJ and access relevant information and data through the clearinghouse mechanism or other means. This will enhance their awareness, knowledge, and capacity to address the issues and opportunities related to marine biodiversity in ABNJ and protect their rights and interests as coastal States. In addition, the Agreement also offers potential benefits from utilizing marine genetic resources in ABNJ, such as scientific information, monetary benefits, or capacity-building, which may support their research and innovation capacities and contribute to their sustainable development goals. However, these benefits may depend on the modalities and criteria for benefit-sharing, which are still under negotiation. Moreover, fisheries are not subjected to these provisions under the Agreement.

On the other hand, the Agreement requires these countries to comply with the obligations and procedures, such as conducting environmental impact assessments for their fishing activities and respecting the measures established by area-based management tools in ABNJ and cooperating with other States and actors as per UNCLOS and UNFSA. This may entail additional costs for the countries in terms of the resources and capacities needed. Moreover, the impact of changes in fisheries management regimes (e.g., the adoption of stricter quotas and the establishment of new marine protected areas) on the livelihoods of small-scale fishers and coastal communities need to be analyzed.

In conclusion, the BBNJ agreement presents a historic opportunity to establish a comprehensive framework for protecting and managing marine biodiversity in ABNJ. Its provisions aim to fill crucial gaps in the current ocean management framework, promote cooperation and coordination among states and RFBs, and support capacity-building efforts in developing countries. While the Agreement may introduce challenges and changes to the fishing industry in the short term, its implementation is essential for securing the long-term sustainability of marine resources.

Reflections

In this featured section, eminent persons would recall and reflect their association with BOBP, providing insights from their experiences.

Chandi Boat Motorisation in Bangladesh in 1980

R. Ravikumar
Naval Architect,Ex FAO-BOBP

When it comes to reminiscing about the successes that the FAO-BOBP had from 1979 to its end in 2000, not many perhaps would know about a low budget small project in Bangladesh to improve the livelihood of thousands of traditional fishermen engaged in the Hilsa fishery, the lifeline of the country. Its initial success led to one catalyst project after another to keep proving its technical and economic feasibility and to attract funding for much larger projects with Bank loans and financial assistance made available to the thousands of poor fishermen who couldn't afford motorisation due to non-availability of own funds or Bank credit.

That story is provided in the "Impact Section" of this Newsletter (p.36). Here, I would like to take you through the journey to get the feel of the project area, the location, the limitations, the brainstorming sessions, and ad-hoc field decisions, an account of which is not usually found in a technical report or working paper.

A few months after joining the FAO-BOBP as a Fishing Craft Expert in August 1979, I was asked by Lars Engvall, the Programme Director, to go to Bangkok, Thailand to meet Tong Nadgratok, the Chief of their Fisheries Technology Division, and to travel with him to Bangladesh to chalk out a plan for motorization of country crafts in Bangladesh. What came to mind easily after a traditional Thai Hot Pot was the 'long-tail' engines used in Thailand on anything that floats. With small sampans powered by engines as low as 4 Hp to the speed boats using more than 100 Hp, the waterways of Bangkok were incredibly congested, and it is a miracle how these boats negotiate at breakneck speeds without slicing anyone while wizened old ladies ply their sampans quietly displaying vegetables or flowers for sale.

Tong and I reached Dhaka and met up with BOBP's Programme Officer, Abul Kashem. Abul knew everyone in Dhaka including the canteen cook at the BFDC. It was rumoured that he could even call the President for a favour. He was the perfect Mr. Fixit for BOBP. A couple of meetings and several cups of tea at the Department of Fisheries (DoF) later, it was suggested that a visit to the island of Bhola might be appropriate.

If one looks at the map of Bangladesh, one can see this fairly large land mass on the river Meghna. This great river drains into the Bay of Bengal. To the west of Bhola is the Bangladesh portion of the mighty Sunderbans and beyond Khulna is the land border with India.

Bangladesh is a riverine country, and many locations are more accessible by river transport than

by road. Hundreds of ferries, large and small, service the commuters to these river ports and landing places. Large steel ferries (launches as they are called) propelled by diesel engines were very popular for the traffic from Dhaka to these places. But for a long trip of two days from Dhaka to Khulna, the "Rocket" service was the most spectacular. Actually, there were four or five of these languid and majestic beasts in operation for over a century, propelled by steam engines driving paddle wheels! just like the Mississippi river boats used as floating casinos and as in the lyrics of the Creedence Clearwater song- Proud Mary.

"Big Wheels keep on turning".

We took the "P.S. Mahsud" (P.S denotes Paddle Steamer) from Sadar Ghat at 4 pm. It is an incredible journey etched in my mind. Getting to the Ghat in the project car, negotiating the narrow roads with about a million cycle rickshaws, and a sea of humanity was a start. Did you know that Bangladesh has nearly a million cycle rickshaws with nearly 70 percent of them in Dhaka? They are decorated in brilliant colours and images.

With tickets for the cabin-class we had a clean but incredibly hot cabin. The deck passengers below, were however, packed like sardines in a tin. The boat could accommodate up to 600 passengers but often carried many more. Sitting on the open-air dining area outside the cabins in the aft deck and watching the sun set and the myriad boats plying the river was a great sight. At midnight The Rocket stopped at Chandpur, the centre for Hilsa trade in Bangladesh. People yelling, some boarding, some leaving using wooden gang planks to the muddy bank, fish baskets being transferred, all added to the chaotic but strange harmony of cacophony enough to wake up all passengers on board.

Anyway, next stop was at Barisal early next morning from where we had to take a smaller launch to Bhola. It was meant to be a two-hour journey, but the boatman lost his way by taking a wrong waterway. There were so many places where the river forked into two or even three waterways and unless you are an experienced boatman who knows which fork to take, there is always a possibility of getting totally lost. The river too is so wide that one cannot see land on either side at all when the boat is mid-stream. The crew and the helmsman argued in heated Bangla till luck finally prevailed. We spotted distant lights late evening. At that moment, we didn't care whether we had found Bhola or not. Any land would have relieved our anxiety. By God's will the lights were from one of the fishing villages in Bhola. No GPS, no echo sounder, no navigation aids but only a hurricane lamp, phew! That was my first experience of many memorable visits to Bhola.

From the jetty to the town centre, we had to take the ubiquitous cycle rickshaws. Rural Bangladesh is incredibly lush and green. The road to town was covered with a canopy of trees all the way. Besides rice fields there were a lot of sugar cane farms. The strong smell of 'gur' hung in the air. In half an hour we reached the town. A few shops and eateries with tin roofs and one hotel defined the high street. The room at the hotel was slightly wider than the door, had a cot but no window `a la a prison cell. That's it. Anyway, being adrift for eight hours, we were tired enough to eat some rice and curry and then crash.

Next morning, we hired cycle rickshaws to visit the nearby village of Radhavallabh on the river bank. It took about three hours to get there. It was a major centre for Chandi boats. The only main road from Bhola town to Char Fasson in the island's southernmost Upazila did not pass any coastal fishing village. Only a couple of rickety buses generally packed inside and with people on the roof with a few odd goats sometimes, plied on that road. However, to reach Radhavallabh one had to branch off after just a kilometre or so from Bhola town, onto side roads passing through rice fields, till we reached the embankment beyond which was the village. Some interior roads were treacherous and slippery with mud, and we had to push the cycle rickshaw to help the rickshaw-puller out. For long distances, sitting on a sloping seat can cause lumbago and I wouldn't recommend it.

The access from the village to the water at low tide was a fair distance away with the flat very muddy. Luckily for us some boats had been moored in a small creek nearby for some hull repairs. Tong and I got to work measuring the boats and asking the fishers about their trips and their preference for such a boat. How boat designs evolve over time to reflect operating needs and local preference for aesthetics and tradition is an interesting subject, but that's another story.

The survey done, Tong and I left for Dhaka the next day by taking the faster steel launch service direct from Bhola to Dhaka. No getting lost this time. My next visit to Bhola was with Kashem after a few months. A market search showed that the Yanmar group made assembled long-tail systems using 9 Hp water cooled diesel

engines that were popular in agriculture that met our needs. One unit was ordered for a trial installation. Meanwhile Kashem had sourced a used Deutz long-tail unit from a Mercedes Benz car service station in Dhaka.

A steel launch to Barisal, an overnight stay at a hostel run by Catholic priests, a local breakfast of dudh-Kola-Mudi (milk, banana and puffed rice), a cup of tea at the jetty and off we went to Bhola. This time it was a steel launch. The Bangladesh Fisheries Development Commission (BFDC) had also seconded a junior fishery officer, Sharif, to assist us while in Bhola. He luckily could handle a wrench and was a great help to me in locating the required items for installation of long tail engines. There is no hardware shop like The Home Depot in Bhola but there was a workshop that repaired the rickety buses, pump sets and cycle rickshaws. There was a good training workshop run by the Swedish Free Mission that helped us out with some bracket welding and the hinge device to lower and raise the long tail unit. Sharif and I explored the lumber shop for wooden beams that I could use to strengthen the boats and provide the extension to fix the hinged engine mounting brackets.

We worked for two days to install the two trial engines on boats volunteered by two adventurous boat owners. Tea breaks were always with a mishti (milk sweets) and matka chai (tea in small earthen pot). After a bit of fine tuning and adjusting the lifting/lowering rope mechanism we ventured out on to the river. A motorised Chandi boat cruising along the creek and then on to the river under engine power for the first time, with the crew all thrilled and waving to onlookers on the riverbank was a great moment to cherish personally. My back ache from the three-hour rickshaw ride over muddy roads and embankments vanished.

The boat speed was good even against the current and one could see the relief in the crew's eyes that they wouldn't need to row anymore (unless the engine malfunctioned). We got back to the village, satisfied with our work. After a small party given by the village elders and some great mishti doi (sweetened yoghurt), it was back to the Bhola Hilton and the ferry back to Dhaka the next day. Mission accomplished. Sharif was posted as the project counterpart and pleaded with me to buy him a motor-cycle to travel every day and monitor the trials and keep an eye on things. He would need physiotherapy otherwise.

Back at BOBP a 150 cc Honda for Sharif was ordered on my recommendation and Kashem was requested to make petty cash available for the project. Trials were conducted for a year and then a larger catalyst project put into operation by providing twenty more installations.

My supervision was over after the first ten installations and Sharif was quite capable by then of overseeing the installations. I would however visit Bhola once every four months to keep an eye on things. Luckily Kashem could arrange better accommodation by then at a DoF office that had two spare rooms for occasional visits of the officials from Dhaka. Transport too was kind on the back with Sharif and I zipping along on the Honda. Riding pillion on a motorbike over slippery embankments, however, I felt like Evel Knieval. But it sure, beats taking the rickshaw any day.

Perhaps, this project was not covered as much in the BOBP Newsletter or elsewhere with spectacular photos, and therefore not as well-known as beach craft development in India. I also dropped my camera in the river on one of those trips.

But yes, overall, in my opinion, this was another project by the FAO-BOBP that had a very successful impact. Without Kashem or Sharif to oversee the operations, it wouldn't have happened. I wonder whether Sharif got to keep that very important Honda motorcycle during his posting at Bhola.
I hope so.

BFDC officials enjoying the ride

Salient Programs/Events

Confluence of Generations: Uniting the Past and Present as BOBP Meets BOBP-IGO

BOBP-IGO celebrated New Year on 05 January 2023 with Mr. Lars Engvall, who started and helmed the FAO's Bay of Bengal Programme from 1979 to 1994. His former colleagues, Mr. S.R. Madhu, Information Officer (1979-1988); Mr. Rathin Roy, Senior Extension & Communications Officer (1987-1999); Mr. R. Ravikumar, Naval Architect (1979-2000); Mrs. and Mr. Anbarasan, Consultants (1982-1985); and Mr. Vijay Kumar, Videographer (1987-1992) also joined along with the BOBP-IGO team to mark the occasion.

The veterans cherished their association with BOBP and reflected on BOBP's inter-disciplinary approach to the fisheries problems which made all the difference. Dr. Krishnan, Director welcomed the ideas shared by the veterans and assured to evolve a mechanism to have intellectual engagements with the experts, who were forthcoming to contribute to every possible endeavor of the IGO.

Mr. Engvall, who at 87, still has space in his diary for sports and intellectual assignments, said that he feels rejuvenated to be part of another success story of BOBP.

Glimpses from the reunion meeting

Fishing Technology and Fish Behaviour Experts from around the globe met in Kochi from 13-17 February 2023

The BOBP-IGO organized a 5-day International Symposium on 'Innovations in Fishing Technologies for Sustainable and Resilient Fisheries' and the 23rd Meeting of the FAO-ICES Working Group of Fishing Technology and Fish Behaviour (WGFTFB 23) in Kochi, Kerala during 13–17 February 2023, in collaboration with National Fisheries Development Board (NFDB) of India. The event was hosted by the Department of Fisheries, Government of India.

The ICES-FAO WGFTFB works on the incorporation of the fishing technology issues and expertise into management advice, including, inter alia, the impacts of fishing on the environment and the promotion of responsible fishing technologies and operation to the global community. Given this, the objectives of the International symposium were to: [1] Provide a forum for global synthesis of scientific knowledge; [2] Identify appropriate technologies for a blue transformation of the SSF; [3] Discuss and review innovations in various domains of fishing technologies; and [4] Evaluate the options for optimizing energy use and reduce GHG emissions.

Shri. J.N. Swain, IAS, Secretary, Department of Fisheries, Government of India inaugurated the Symposium. Dr. J.K. Jena, Deputy Director General (Fisheries), Indian Council of Agricultural Research (ICAR); Dr. C. Suvarna, IFS, Chief Executive, NFDB and Dr. J. Balaji, IAS, Joint Secretary, (DoF), GoI were the Guests of Honour. Mr. Jonathan Lansley, Fishery Industry Officer, FAO; Dr. Antonella Sala, Scientist, CNR, Italy and Dr. Daniel Stepputtis, Scientist, Thuenen, Germany were the Co-Chairs of the WGFTFB 23.

Over 250 delegates from 30 countries including scientists, senior government officials, representatives from industry, and students attended.

ICAR-Central Marine Fisheries Research Institute (CMFRI), ICAR-Central Institute of Fisheries Technology (CIFT), Central Institute of Fisheries Nautical & Engineering Training (CIFNET), Fishery Survey of India (FSI), Kerala University of Fisheries and Ocean Studies (KUFOS), Tamil Nadu Dr. J. Jayalalithaa Fisheries University (TNJFU) and Cochin University of Science and Technology (CUSAT) collaborated with BOBP-IGO in organizing this Symposium at Kochi.

Glimpses from the symposium

Industrial Expo

An Industrial Expo was organized at the sidelines of the International Symposium. Fourteen organizations from India and abroad took part. It showcased the innovations and technologies in fish harvest sector. The Expo provided opportunities for the participants to meet the other stakeholders from India and abroad and explore different issues in fisheries management and offer possible solutions. Considerable interest was noted in the participants from the Bay of Bengal rim countries in areas such as potential fishing zone and by-catch management.

Inauguration of the stall by Secretary (Fisheries), Government of India;
Delegates visiting the stalls in Industry Expo

Art and Artists Add Colours to the Global Conference on 'Innovations in Fishing Technologies for Sustainable and Resilient Fisheries'

The Waves of Art Series 3, a live collaborative sketching event was held with a theme on Artisanal Fisheries on the sidelines of the ICES-FAO International Symposium during 13-14 February 2023. Artists from BOBP-IGO and Arnavaz Vasudev Charities, Cholamandal Artists Village, Chennai and Urban Sketchers of Kochi actively participated and coordinated the participatory sketching event.

The paintings created with various mediums during the event were displayed on a panel, which was a huge attraction for participants from all around the world.

Glimpses of the Art Event: Dignitaries making a brush stroke; the
wall of art – an attraction and Selfie point during the event

Dinner Meeting on-board Nefertiti

The Government of India hosted a dinner in honour of the delegates who participated in the International Symposium from different parts of the world on-board Nefertiti, a cruise ship of the Kerala Shipping and Inland Navigation Corporation (KSINC) operating from Kochi.

The boat cruised in the Kochi backwaters upto the bar mouth, where the guests witnessed the sunset. During the cruise, cultural programmes representing the traditional Indian culture were also arranged.

Exposure Visits

The participants of the International Symposium were taken for an exposure visit to ICAR-Central Marine Fisheries Institute (CMFRI), the region's leading tropical marine fisheries research institute and ICAR-Central Institute of Fisheries Technology (CIFT), a premier research institute in India focusing on fishing technology and fish processing. The delegates interacted with the Director and senior scientists on their key activities and were shown the lab facilities. The delegates also had an option to visit a private fish processing plant (M/s Amalgam Foods, Kochi) or cruise in Kochi backwaters to watch traditional fishing practices.

Brainstorming session on Strategies for Deploying Artificial Reefs and Sea Ranching in South Asia: Learning from the Experiences

BOBP-IGO organized a Brainstorming Session on Strategies for Deploying Artificial Reefs and Sea Ranching in South Asia: Learning from the Experiences in collaboration with ICAR-CMFRI on February 14th, 2023 at Kochi on the sidelines of the ICES-FAO International Symposium to discuss strategies for rebuilding fish stocks and maintaining ecological balance through artificial reefs and sea ranching.

The event brought together a diverse group of experts, including researchers, policymakers, and practitioners from South Asia to discuss past experiences, emerging challenges, and enabling policies related to deploying artificial reefs and successful ranching programs. The aim was to deepen participants' understanding of the issues and challenges associated with these approaches, as well as to develop strategies towards deploying artificial reefs and sea ranching of selected species for the region. Senior officials from Bangladesh, India, Maldives and Sri Lanka made presentations on the country status and their experiences. The technical presentations provided a detailed analysis of the latest ongoing research and salient findings. The event proved to be an invaluable platform for experts to share their knowledge and experiences towards developing strategies for the future.

Snapshots of the Brainstorming Session on Artificial Reefs and Sea Ranching

Panel Discussion in progress

Panel Discussion on Future Proofing Small Scale Fisheries (SSF): Innovations in Fishing to Enhance Contribution of SSF to Food Security

BOBP-IGO organized a Panel Discussion on 'Future Proofing Small Scale Fisheries (SSF): Innovations in Fishing to Enhance Contribution of SSF to Food Security' on 16th February 2023 at Kochi at the side-lines of the WGFTFB23, in collaboration with ICAR-CIFT, International Pole and Line Foundation (IPNLF) and Sri Lanka Forum for Small Scale Fisheries (SLFSSF). Delegates from fisheries ministries /departments and institutions from the region, FAO and ICES attended.

Welcoming the delegates, Dr. P. Krishnan, Director, BOBP-IGO highlighted the need for modernizing the small-scale fisheries (SSF) sector retaining the characteristics of the traditional SSF sector while addressing issues, such as low productivity, declining production, and labour concerns. Mr. Jon Lansley, Fisheries Industry Officer, FAO drew attention to the Voluntary Guideline on SSF, and Dr. Daniel Stepputis, Co-Chair, WGFTFB23 delineated the differences in perception of people about the fisheries and reaching a common ground. Mr. Sebastian Mathew from ICSF advocated adopting a standard definition for SSF and considering a Métier (characteristics)-based approach.

Dr. Shiham Adam, Director, IPNLF-Maldives, and Prof. Oscar Amarasinghe, Chancellor, Ocean University, Sri Lanka traced the history of fisheries development and lessons learned in their respective countries. Dr. B.K. Das, Director, CIFRI made a presentation on Inland Fisheries issues. The conference also discussed the possibility of designating fishing zones for the conservation of marine and coastal biodiversity. Overall, the conference aimed to raise awareness about sustainable fishing practices and the need to establish a modern SSF sector capable of standing up to future challenges.

Panel Discussion in progress

Brainstorming Session on Greening the Fisheries Sector: Innovations and Solutions from the Industry

A brainstorming session on the topic of "Greening the Fisheries Sector: Innovations and Solutions from the Industry" was organized by BOBP-GO in collaboration with ICAR-CIFT, TNJFU and National Maritime Foundation (NMF), New Delhi on 17th February 2023 at Kochi, to explore the role of technology in mitigating greenhouse gas emissions from the marine capture fisheries sector. The event aimed to identify issues related to green fishing in the Bay of Bengal Region and bring various stakeholders together to discuss developing energy-efficient fishing vessels and promoting sustainable fishing practices.

Dr. P. Krishnan, Director of BOBP-IGO emphasized the need to develop strategies for decarbonization of the fisheries sector and share experiences on development and implementation issues in promoting green fishing activities. The technical session provided a platform for stakeholders to explore innovative solutions to reduce greenhouse gas emissions from the marine capture fisheries sector and promote sustainable fishing practices. The need for a holistic, cross-domain effort to make fishing in the Bay of Bengal region sustainable, energy-efficient, environmental-friendly, affordable, and profitable was emphasized.

Commodore Debesh Lahiri, Executive Director of the National Maritime Foundation (NMF), suggested that, it is essential to consider the entire fishing ecosystem to accomplish de-carbonization in the industry, instead of just focusing on fishing fuel. He stressed that the process of transformation cannot be instantaneous and highlighted the need for stronger science-policy interface in this regard.

Shri. Sagar Mehra, Joint Secretary (Inland Fisheries), Department of Fisheries, Government of India, referred to the Panchamrit (five promises) initiative of Prime Minister Narendra Modi, which aims to raise the non-fossil energy capacity to 500 GW by 2030 and ensure that half of the energy needs are met through renewable energy. He stated that India is committed to paving the way for the use of renewable energy in the fisheries industry. Despite the fishing sector's low impact on global greenhouse gas emissions, India will seek support to revamp the industry and address environmental concerns.

Glimpses from the Brainstorming Session

International Women's Day celebrated at BOBP-IGO

BOBP-IGO organized a sketching event with Artists and Students to commemorate Women's Day (08 March 2023) as a part of its Waves of Art, a social art initiative. Women art teachers and students participated and did water colour painting, origami and traditional paintings of Cheriyal and Madhubani.

Dr. Dhilshad Dharani and Dr. Lucky, Faculty from SIET were the Guests of Honour. Dr. E. Vivekanandan, the renowned Fisheries Scientist, presided over the event. The event saw the women artists engaging in watercolour painting, origami, and traditional paintings of Cheriyal and Madhubani. Through this initiative, BOBP-IGO highlighted the importance of sustainable fishing practices and the conservation of marine resources, while highlighting the crucial role of art and culture in creating positive change.

Snapshots of the International Women's Day Celebration

Strengthening Cooperation

A Collaborative Platform for Research and Education in Marine Sciences amongst Bay of Bengal Littoral Countries

On February 14th, 2023, representatives of the littoral countries of the Bay of Bengal came together in Kochi, India to discuss the strategies for collaboration in marine scientific research and education in the region. The event, hosted by the BOBP-IGO and the Centre for Humanitarian Dialogue (HD) at the side-lines of the WGFTFB23, was opened by Secretary of Fisheries of Govt of India, Shri Jatindra Nath Swain, IAS. Amb. Rudrendra Tandon, Additional Secretary (BIMSTEC & SAARC), Ministry of External Affairs, Government of India, and Dr. J.K. Jena, Deputy Director General (Fisheries), ICAR also spoke on the occasion detailing an agenda for collaboration.

During the meeting, participants from Bangladesh, India, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand presented the statuses of their current research trends and priorities. The key outcomes of the dialogue are the identification of common areas for research and collaboration and the call for the establishment of a "Bay of Bengal Marine Research Network" under the aegis of the BOBP-IGO. Furthermore, the participants also called for promoting marine education in the region, including establishing short-term vocational training, joint Ph.D. programs, student exchange programs, and joint research.

The vision perceived by the participants was canonized in the form of the Kochi Declaration with a universal call for promoting collaborative research and education in the region.

Snapshots of the Regional Dialogue on Marine Scientific Cooperation in the Bay of Bengal Region

Research Collaboration among South Asian Countries

BOBP-IGO organized an interactive meeting on 15th February 2023 between the officials and scientists from its member countries viz., Bangladesh, Sri Lanka and Maldives and the major fisheries research institutes in India. The meeting, organized in the sidelines of the FAO-ICES WGFTFB-23 was held at ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi.

From the Indian side, detailed presentations were made by ICAR-CMFRI, ICAR-CIFT, ICAR-Central Institute of Brackishwater Aquaculture (CIBA) and Indian National Centre Ocean Information Services (INCOIS) on their key research programmes and potential areas for collaboration with Bay of Bengal rim countries.

The representatives of BOBP-IGO member countries presented a brief on the current research areas in the respective countries, gaps and possible areas for collaboration.

A delegation of officials and scientists from South Asian Countries visited ICAR-CMFRI

BOBP-IGO and PRIST University sign MoU to Facilitate Regional Collaboration in Research and Education

BOBP-IGO signed an MoU with the Ponnaiyah Ramajayam Institute of Science & Technology (PRIST) (Deemed University), Tamil Nadu, on 18th March 2023, to facilitate joint programmes and enable students from BOBP member countries to pursue education and research on regional issues related to sustainable fishing practices. The MoU aims to promote cooperation between BOBP-IGO and PRIST to develop innovative solutions to address the challenges faced by the fishing industry and marine ecosystems.

BOBP-IGO signing an MOU with PRIST University

BOBP-IGO to Collaborate with Andaman and Nicobar Islands Administration for Sustainable Fisheries Development in Bay Islands

Dr. P. Krishnan, Director of BOBP-IGO, visited Andaman and Nicobar Islands (ANI) from 15th to 18th March 2023 on an invitation from the ANI Administration (ANA). The focus of the visit was to explore possibilities for collaboration between BOBP-IGO and ANA for sustainable fisheries development in the region.

Dr. Krishnan had a meeting with Mr. Keshav Chandra, IAS, Chief Secretary, A&N Administration, where he emphasized the importance of regional collaboration and knowledge-sharing with South Asian and Southeast Asian countries for fisheries development in ANI. The Chief Secretary welcomed Dr. Krishnan's suggestions and expressed his hope to work together with BOBP-IGO to develop the fisheries sector in ANI as a model for the region. Ms. Nandini Paliwal, IAS, Commissioner-cum-Secretary (Fisheries), and other Senior Officials of the Department were present during the meeting.

Dr. Krishnan also visited ICAR - Central Island Agricultural Research Institute (ICAR-CIARI) and regional offices of FSI, NIOT, and ZSI, to discuss and explore possibilities for collaboration between BOBP-IGO and these organizations in the field of fisheries research and development. BOBP-IGO's focus on collaboration and knowledge-sharing underscores the importance of regional cooperation for achieving sustainable fisheries and marine conservation in the Andaman and Nicobar Islands.

Director, BOBP-IGO with Chief Secretary and Senior Fisheries Officials of ANI; Director, CIARI; Officer-In-charges of ZSI, FSI NIOT

Meetings / Events Participated

Indo-Pacific Confluence Dialogue 2023

Dr. P. Krishnan, Director BOBP-IGO participated in the Indo-Pacific Confluence Dialogue 2023 organized by The Peninsular Foundation (TPE) and Taipei Economic and Cultural Center (TEEC) in Chennai during 10-11 January 2023. Mr. Hans Raj Verma, IAS, Additional Chief Secretary, Govt of Tamil Nadu delivered the inaugural address. Dr. Krishnan chaired a Session on “Life Around and Below Water: Rational Exploitation for a Sustainable Blue Economy". The Meeting was attended by Diplomats, Senior Bureaucrats, Naval Officers, and Academicians from Bangladesh, India, Maldives, Sri Lanka, Singapore, and Taiwan.

Glimpses from the event: Director, BOBP-IGO with the participants of the event; Chairing the session on “Life Around and Below Water”; and with Dr. Shiham Adam from IPNLF, Maldives

FAO Regional Workshop for a Network of Practitioners on Fishery Stock Assessment

Dr. P. Krishnan, Director BOBP-IGO participated in the "FAO Regional Workshop for a Network of Practitioners on Fishery Stock Assessment 2023" organized by FAO in Bangkok, Thailand during 23-25 January 2023. The workshop was attended by delegates from Bangladesh, India, Maldives, Sri Lanka, Cambodia, Thailand, Malaysia, and the Philippines along with FAO experts. In the Working Group for South Asia, moderated by Director, BOBP, the delegates prepared an operational action plan aimed at improving stock assessment procedure in the region. The talk on "Future networking and capacity-building in stock assessment in South Asia", by Dr. Krishnan highlighted the importance of networking among stock assessment experts and initiatives

taken by the BOBP-IGO in this regard. The participants from the BOBP-IGO member-countries also agreed to set up an informal network, Bay of Bengal Fish Stock Assessment Network (BOBSAN) under the aegis of the BOBP-IGO to foster cooperation.

Regional Workshop in progress

Director, BOBP-IGO with the delegates from Bangladesh, India, Maldives and Sri Lanka

Regional Coordinated Action Emphasized to Address Aquatic Animal Disease

The Centre for Environment, Fisheries, and Aquaculture Science (CEFAS) and CMFRI organized the 'One Health Aquaculture India' Workshop in Kochi, during 20-22 February 2023 in which around 120 delegates from India and Europe participated.

Participating in the workshop, Dr. P Krishnan, Director, BOBP-IGO highlighted the need for a regional surveillance program involving collaboration from different stakeholders, as well as innovative partnership pathways for enhancing risk management and monitoring transboundary aquatic animal diseases. The Workshop emphasized the importance of collaboration and knowledge-sharing among the countries to promote sustainable aquaculture practices and address aquatic animal diseases.

One Health Aquaculture India Workshop was organized during 20-22 February 2023 in Kochi by the Centre for Environment, Fisheries, and Aquaculture Science (CEFAS) and Central Marine Fisheries Research Institute (ICAR-CMFRI) in a hybrid mode. The event was attended by about 120 delegates from India and Europe. Dr. A. Gopalakrishnan, Director, ICAR-CMFRI delivered the keynote address.

In addition, Dr. Krishnan described how BOBP-IGO is promoting research collaboration at the regional level and said that trust-building is like sculpting. There should be steady and sustained efforts without immediately visible outcomes.

Participants of the 'One Health Aquaculture India' Workshop

SAI 20 Blue Economy Conference: Experts discuss strategies for harnessing biotic resources

Participants of the SAI G20 Blue Economy Conference

The Office of the Comptroller & Auditor General (CAG) of India organized the Blue Economy Conference under the aegis of Supreme Audit Institutions of G20 Countries (SAI 20) on 27th February 2023 in New Delhi. The conference brought together key officials from CAG, NITI Aayog, MoEFCC, NCSCM, World Bank, RIS, and other organizations to discuss strategies for optimally harnessing biotic resources in the blue economy.

Dr. P. Krishnan, Director of BOBP-IGO, delivered a talk on "Blue Economy: Harnessing the Biotic Resources – Indian Experience". He emphasized the crucial role of fisheries in the blue economy and highlighted the challenges of overfishing, overcapacity, sectoral conflicts, and environmental degradation. Dr. Krishnan stressed the importance of data-driven fisheries management, greening the fisheries sector, and future-proofing small-scale fisheries sectors to develop an effective Blue Economy strategy. He also discussed the need for innovative solutions and partnerships between different stakeholders to address the challenges facing the fishing industry and marine ecosystems.

By bringing together experts from different sectors, the conference emphasized the importance of collaboration and knowledge-sharing for promoting sustainable practices and improving the management of marine resources.

4th Students Convention of ICAR-CIFE, Mumbai

Dr. Krishnan, Director, BOBP-IGO attended the 4th Student Convention of CIFE held on 20th March 2023, as a Guest of Honour. In his speech, he emphasized the vital role of education in shaping the future and empowering individuals to make a positive impact. Dr. Krishnan also commended the initiatives taken by CIFE that have been instrumental in enhancing the skills and perspectives of individuals. Dr. J K Jena, Deputy Director General (Fisheries) ICAR and Dr. Dilip Kumar, Former VC ICAR-CIFE, and Dr. Ravishankar, VC, CIFE also spoke on the occasion.

The event was held on the sidelines of XVI convocation of ICAR-CIFE, wherein Dr. Himanshu Pathak, Director General, ICAR and Secretary, Department of Agricultural Research and Education, Government of India, was the Chief Guest. "*Fisheristic*", an exhibition of game-changing ideas and concepts, depicting the future of fisheries was also organized as a part of the Student's Convention.

Glimpses of 4th Student convention of ICAR-CIFE

BOBP-IGO Calls for a Network of Ocean Researchers during IOCINDIO-IX at Dhaka

Dr. P. Krishnan visited Bangladesh to attend the IX Intergovernmental Session of the IOC Regional Committee for the Central Indian Ocean (IOCINDIO-IX) held in Dhaka during 28-30 Mar 2023. Dr. A K Abdul Momen, MP, Foreign Minister, Government of Bangladesh, inaugurated the event. Representatives from 14 member states of IOCINDIO, including India, Indonesia, Bangladesh, Maldives, and Sri Lanka took part. Issues ranging from the blue economy to marine biodiversity preservation, marine ecosystem, human health, the UN Decade of Ocean Science, and future activities of IOCINDIO were discussed during the event.

Speaking during the High-Level Panel Discussion, Dr. Krishnan emphasized the importance of utilizing existing cooperation platforms for ocean research and conservation in the Indian Ocean Region, under the aegis of organizations such as BOBP-IGO, FAO, and CBD. He called for mainstreaming networking within existing national research projects and programmes to meet the targets of the Ocean Decade.

Glimpses from the *IOCINDIO-IX*

Participants of the IOCINDIO-IX

Visit to Fisheries Development Organizations in Bangladesh

Dr. Krishnan during his trip to Bangladesh met senior officials from the Ministry/Department of Fisheries, Government of Bangladesh (GoB), and interacted on the potential areas of partnership and cooperation.

Dr. Krishnan visited the Office of SAARC Agricultural Centre (SAC) and interacted with the potential areas of collaboration with the team of officials and possibilities for collaboration and knowledge-sharing among countries in the region. During the meeting with Dr. Cherdsak Virapat, Director General of Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP) both discussed the steps to operationalize the MoU between the IGOs.

During his visit to Cox's Bazar, Dr. Krishnan visited the regional office of Department of Fisheries (DoF), regional research facilities of Bangladesh Fisheries Research Institute (BFRI), seabass / crab hatchery facility of DoF, a private Specific Pathogen Free (SPF) Monodon hatchery and the modern export-oriented fish drying unit. The visit was facilitated by the officers in the DoF, Bangladesh.

Secretary and Senior Officials of DoF, Bangladesh

Visit to SAARC Agriculture Centre and CIRDAP



Visit to Modern Drying Yard at Cox's Bazar



BFRI Regional Station at Cox's Bazaar



Visit to SPF Monodon Hatchery and State Fish Hatchery

Other events/meetings attended by BOBP-IGO Staff

Dr. P. Krishnan, *Director*

- Periodic meetings of the EAF-NANSEN core Group as its Expert Member
- Knowledge Workshop on Prospects in Deep Sea Mining at the NIOT campus on 27 January 2023
- Webinar conducted by SOI Global and presented the regional roadmap on behalf of the South & Southeast Asia group, on 16 February 2023
- Launch of three significant initiatives conducted at the ICAR-Central Institute of Brackishwater Aquaculture on February 27, 2023
- Webinar conducted by CIRDAP, on Best Practices of Integrated Rural Development (IRD) Policies on 28 February 2023
- Virtual programme on the occasion of International Women's Day conducted by the M.S. Swaminathan Research Foundation (MSSRF) and Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP) on 7 March 2023
- Webinar conducted by FAO/ISLME Project, Jakarta on Developing the Economic Circularity of Waste Management in Fishing Port

Study Report

BOBP-IGO undertakes focussed studies concerning fisheries development. This section presents the key findings and lessons from the studies for the region.

Making Inroads: Addressing the Preventable Casualties in Marine Fisheries in the Bay of Bengal

Fishing is hazardous. It's heart-breaking to think that more than 32,000 fishers lose their lives every year. Fishers face risks like vessel breakdown, extreme weather, chemical exposure, falls, and fatigue. Despite these dangers, fishing remains an important source of income and food for millions. Especially in tropical waters like the Bay of Bengal, fishers are facing increasing risks due to climate change. This not only affects the individuals and their families but also has a significant impact on small-scale fishing communities. Without social security benefits, these communities are left vulnerable. They may even be pushed into poverty due to the loss of income. There is a need to recognise the gravity of this issue and work towards finding solutions to support these communities.

However, traditional fisheries management has not provided adequate focus on safety at sea, prioritising production and conservation efforts, instead. Fishers also fail to emphasise safety, unless when an untoward incident occurs.

Efforts are now being made to promote safe and fair working conditions for fishers globally. Organisations such as FAO, International Labour Organization (ILO), and International Maritime Organization (IMO) are raising awareness about the challenges faced by the fishers. BOBP-IGO is playing a pivotal role in promoting safety at sea in fisheries management in the Bay of Bengal region. Progress is being made, but there is still a long way to go.

Overview of Risks and Hazards

Fishers are exposed to various hazards, including extreme temperatures, harsh weather conditions, chemical exposure, working at heights, slip-and-fall risks, and fatigue. These hazards are far from ordinary and pose a significant threat to the fishers. However, many of these risks are preventable to an extent or even entirely, with proper interventions. The risks confronted by the marine fishers in tropical waters such as the Bay of Bengal and possible preventive measures are summarized in Table 1.

International Arrangements on Safety at Sea

International arrangements on safety at sea involve the cooperation of three UN specialized agencies: IMO, ILO, and FAO. However, their approaches have a limited impact on small-scale fishermen's safety, as their suggestions and regulations primarily target larger vessels.

Fishing boats in developing countries are often excluded due to size limitations or explicit exemptions. There are various agreements and guidelines aim to ensure safety at sea [Box: INTERNATIONAL SAFETY INSTRUMENTS].

Despite these efforts, small-scale fishermen in developing nations still face safety challenges due to their limited exposure and inclusion in such regulations.

Table 1. Risks, consequences, and possible preventive measures in marine fisheries

Risk/Hazard	Consequences	Preventive Measures
Vessel Disasters (sinking or capsizing)	Fatalities, injuries, loss of equipment	Proper vessel maintenance, safety equipment (life jackets, life rafts, etc.), meeting stability requirements
Slips, trips, and falls	Injuries, hospitalisation, disability	Dry decks, non-slip flooring, safety footwear, safety harnesses
Fatigue	Chronic or long-term fatigue, injuries, endangering co-workers	Rest periods, shift work, workplace stress management, workload reduction
Extreme weather conditions	Injuries, death, damage to infrastructure and facilities	Advanced weather forecasting, safe port locations, appropriate gear and equipment, training on safety during severe weather conditions
Chemical Exposure	Health issues, poisoning, disability, death	Use of appropriate Personal Protective Equipment (PPE), proper handling of chemicals, regular medical check-ups
Working at heights	Injuries, falls, hospitalisation, disability	Proper safety harnesses, ladders, scaffolding, and guardrails
Contact injuries (high-tension lines and cables)	Amputations, death	Adequate training on safety procedures, insulated gear, signage, and warnings
Poor enforcement of safety regulations	Untoward incidents due to neglect of safety protocols	Regular safety audits, proper monitoring, and enforcement of safety regulations, strong safety culture, and awareness
Lack of adequate search and rescue operations	Loss of life, equipment, and infrastructure	Increased investment in search and rescue vessels, training of personnel, advanced safety equipment
Resistance to policies related to working conditions, wages, and social protections	Lack of on-board safety measures, inadequate social protection, loss of profitability	Education and awareness-raising, communication and consultation with fishers and their organisations, incentives for compliance
Heart attacks and medical emergencies onboard	Death, injuries, hospitalisation, disability	Sensitization on lifestyle disorders, balanced food, need for periodic health check-ups, first-aid approaches

Box: 1

International Safety Instruments

- SOLAS (Safety of Life at Sea), which sets basic requirements for ship design, equipment, and operation.
- The 1994 UNCLOS mandates nations to exercise authority and supervision over registered vessels to ensure safety.
- The Torremolinos International Convention for the Safety of Fishing Vessels (1977) establishes minimum safety standards for larger fishing vessels.
- The 2005 FAO/ILO/IMO Code of Safety covers all fishing vessels and provides safety and health standards for decked fishing vessels.
- The 2005 FAO/ILO/IMO Voluntary Guidelines specifically guide smaller fishing vessels.

Other international arrangements include International Regulations for Preventing Collisions at Sea (COLREGS, 1977), the International Convention on Maritime Search and Rescue (1979), International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F, 2012), the IMO code for marine casualty investigation, the Work in Fishing Convention 2007, and the Cape Town Agreement (2012).

Role of the BOBP-IGO

The BOBP-IGO is playing a significant role in promoting safety at sea in the region. The interventions of the BOBP-IGO are broadly categorised into three areas: (i) policy advocacy; (ii) technology diffusion; and (iii) capacity-building and awareness-raising. As part of its policy advocacy efforts, the BOBP-IGO collaborates with member countries, other countries, and international organisations to increase awareness and prioritise the safety and working conditions of fishers and their families in the region. The current country positions on sea safety as per publicly available information are summarized in Table 2.

Table 2. Country-wise National Policy and legal measures on safety at sea

Country	Policy/Regulation	Key Provisions	Safety Equipment & Training
Bangladesh	Bangladesh Fishing Vessels and Deck Officer Certification Rule 2003; Bangladesh Fishing Vessel Safety Equipment Rules, 2005	Emphasis on safety equipment, vessel certification scheme, provisions for marking vessels, safety certificates, life-saving appliances, radios, navigation, and firefighting appliances	Mechanized commercial vessels must carry safety equipment; Deck officers should be trained.
India	National Policy on Marine Fisheries, 2017	Update legislation to meet safety needs, comply with international standards, expand the scope of the Marine Fisheries Regulation Authority	Regular inspections of safety equipment on fishing vessels, lifesaving equipment, communication tools, and enhancing skills and capacity of fishermen
Sri Lanka	National Plan for Safety of Fishers and Fishing Vessels at Sea	Safety and security of fishers and fishing boats, Fisheries Accident Reporting System, database	Guidelines on facilities, boat production, quality standards, safety/navigation/ communication equipment, training modules, and competency certificates

- The Chennai Resolution, adopted during the Regional Safety at Sea Workshop held in Chennai, India, in 2001, is a significant driver of the BOBP-IGO's safety and decent work activities. This resolution urged for the integration of safety and decent work as a fisheries management objective, thus promoting a holistic approach.
- BOBP has also contributed in terms of technology diffusion by developing indigenous fishing vessels. The BOBP's IND-30 model has become a benchmark in the region and has been widely adopted.
- BOBP-IGO developed a Life-Saving Buoy for decked fishing vessels, which can support 12 crews in an emergency and meet the shortfall of the uses of personal floating devices (PFD).

Country-specific Policy Briefs on Marine Fisheries Insurance developed by BOBP-IGO were released during the Inauguration pf the FAO-ICES International Symposium on 13 Feb 202

(a) Advocacy for Improving Social Security

BOBP-IGO has conducted studies on applying for insurance as a tool for managing marine fisheries and building resilience in South Asia. The study highlighted the need for a proactive governmental engagement with the insurance industries and fishers to break the barrier, bringing down the cost of insurance, and develop a parametric insurance program, preferably encompassing the Bay of Bengal rim countries for covering unforeseen and broad-based climate risks, such as cyclone damages.

Such initiatives will ensure that fishers are equipped with proper safety equipment and trained to use them effectively, thereby reducing risks of accidents and fatalities. Additionally, the authorities' regular inspections of safety equipment on fishing vessels will ensure that the equipment is in good condition and working effectively.

Country-specific Policy Briefs on Marine Fisheries Insurance developed by BOBP-IGO were released during the Inauguration pf the FAO-ICES International Symposium on 13 Feb 2023

(b) BOBSAFE: Regional Action Plan on Sea Safety

BOBP-IGO has developed a Regional Action Plan on sea safety with FAO. The draft BOBSAFE action plan aims to address the challenges faced by the fisheries industry in the Bay of Bengal, including unsafe working conditions, and a lack of social protection for the fishers. The Plan proposes various strategies, such as data collection, vessel safety, improved communication equipment, insurance, social security, and better search and rescue operations. The Plan also includes strategies for capacity building and training as vital elements in improving the fisheries sector, with specific initiatives outlined for Bangladesh, India, Maldives, and Sri Lanka. The Plan covers the period from 2023 to 2032. In addition, it incorporates gender as a cross-cutting theme, recognizing the significant role of women in fisheries. Developed by FAO and the BOBP-IGO together, the Plan will be put up for adoption by the member countries of the BOBP-IGO later this year.

(c) Multi-lingual Publications

The Organisation develops guides, posters, and videos in regional languages covering crucial topics such as vessel maintenance, onboard safety measures, engine maintenance, and international safety guidelines, which are imparted to the fishers through the extension services of the concerned Ministries/ Departments. Translations of FAO publications in regional languages, such as the "Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length", Videos on Engine troubleshooting and Maintenance, and training of trainers have gone a long way in promoting safety and decent working conditions among fishers.

BOBP-IGO and FAO publsihed a Practical Guide on FRP Boart Repair in 2023

Epilogue

In conclusion, preventing avoidable casualties in marine fisheries requires a collaborative effort from regional and international organizations, policymakers, and stakeholders. There is a need for coordinated approach to ensure that all fishers in the region have access to the proper safety equipment, training, and social security benefits to protect themselves and their communities from the devastating consequences of preventable accidents.

We can succeed in reducing the preventable casualties in marine fisheries and create a safer, more sustainable future for fishers in the Bay of Bengal region, by working together and the following comprehensive approach is suggested in this regard.

1. **Training Workshops:** Conduct training workshops for fishers, vessel owners, and relevant stakeholders on vessel maintenance, onboard safety measures, engine maintenance, and international safety guidelines to improve their understanding of safety measures and best practices for preventing accidents.
2. **Research Programs:** Research to focus on understanding the unique challenges faced by small-scale fishers; developing practical solutions to address those challenges and innovative safety technologies, equipment, and location-specific methodologies. Local and international institutions should collaborate to share knowledge and insights.
3. **Policy Advocacy:** Advocacy for integrating safety and decent work as a fisheries management objective; bridging the gap between fishers' conditions and the state of fisheries; collaborating with other countries and international organizations to increase awareness; and prioritising safety and working conditions of fishers and their families in the region.
4. **Technology Diffusion:** Promote development and adoption of indigenous fishing vessels that meet international safety standards and encourage using life-saving equipment such as personal floating devices and life-saving buoys.
5. **Capacity Building and Awareness-Raising:** Develop and disseminate guides, posters, and videos in regional languages covering crucial safety topics; Translate international guidelines into regional languages to ensure accessibility for fishers; Train trainers to promote safety and decent working conditions among fishers.
6. **Improving Social Security:** Promote insurance to manage marine fisheries and build resilience of small-scale fishers in South Asia. Encourage proactive government engagement with insurance industries and fishers to break barriers, reduce insurance costs, and develop parametric insurance programmes for unforeseen climate risks.

Implementation of above interventions will pave the way towards a future that is not only safer but also more sustainable for the fishers in the Bay of Bengal region.

Perspective

In this section, policy options to address specific issues are presented based on analysis of regional fisheries scenarios

Are Weedy Days Ahead? Feedback from Seaweed India 2022

Rajdeep Mukherjee, M. Sri Hari and P. Krishnan

There is a growing buzz around seaweed farming. Seaweed currently is the fastest-growing food production sector in the world, with a growth rate of about 8 percent per year. The market size for seaweed is expanding. It is likely to reach USD 24 billion by 2024. Seaweed has been traditionally farmed and used in southeast and eastern Asia. Its newfound halo, however, comes from championing it as a panacea for our modern problems of feeding the billions, carbon sequestration, and maintaining ecosystem health.

Seaweed was singled out as a multifaceted ocean-based solution for combating climate change and meeting nutritional needs at the United Nations Climate Change Conference (COP26) in 2021. The significance of seaweed as a blue carbon sink, regenerator of marine life, and source of sustainable economic opportunities for coastal communities was also emphasized.

However, widespread concerns about the negative socio-ecological impacts of seaweed farming are also a potent case for consideration. For example, seaweed farming is reported to pose risks of bio-invasion and conflict amongst resource users. Seaweed farming is associated with decreasing seagrass cover, density, and biomass and limiting its carbon and nitrogen sequestration capacity (Hugo et al., 2021). Without adequate infrastructure and linkages, the seaweed buzz can also create expectation bubbles plodding coastal communities to make unsustainable and over-investment in the sector.

To explore these issues and charting a growth path, the BOBP-IGO organised Seaweed India 2022 – an international conference with international participation from academia, industry, farmers, and other stakeholders from 28 – 29 September 2022 in Chennai. The present article is based on the outcome of the Conference. We have also attempted to analyse scope of seaweed farming in other member countries of BOBP-IGO based on information available in the public domain.

Growth of Seaweed Farming: Global Scenario

Global seaweed production (capture and culture) has increased from 0.5 million tonnes to 36 million tonnes from 1950 to 2021 (FAO). Much of this growth came from the rapid increase in seaweed farming since the 1990s (Figure 1). Back in 1969, the global production of seaweed, which amounted to 2.2 million tonnes, was equally shared between wild harvesting and cultivation. However, over the following 50 years, while the output from wild harvesting stayed constant at ~ 1.1 million tonnes, farmed seaweed saw a massive increase, reaching 35 million tonnes in 2020 and accounting for 97 percent of global production.

China is the largest producer of seaweed production, followed by Indonesia and South Korea. The main types of algae cultured around the globe are *Laminaria japonica, Undaria pinnatifida, Kappaphycus alvarezii, Sargassum fusiforme, Eucheuma spp, Gracilaria spp*. While seaweed farming is traditionally practiced in Asia, during the last two decades (2000-21), Europe has made rapid progress in seaweed farming (CAGR: 18.44% compared to 6.63% in Asia). "The European Commission has

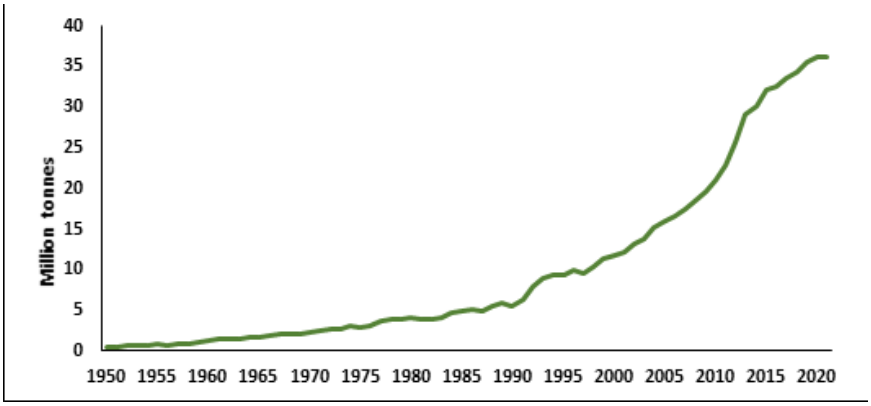


Figure 1.Global seaweed production from marine waters

proposed 23 actions to unlock the potential of algae in the European Union, where the demand is expected to reach €9 billion a year by 2030." (Europe to Promote Seaweed and Algae Production, 2023). The cultivation of seaweed is growing in Oceania (CAGR: 3.73%) and Africa (CAGR: 2.39%).

Seaweed Conference 2022

The "Seaweed India-2022" was organized by the BOBP-IGO in collaboration with Smart Agripost, a popular agriculture magazine, and the ICAR-Central Marine Fisheries Research Institute (CMFRI) with funding from the Department of Fisheries and Fishermen Welfare (DFFW), Government of Tamil Nadu, and National Fisheries Development Board (NFDB), Department of Fisheries, Ministry of Fisheries, Animal Husbandry, and Dairying, Government of India. The Conference addressed issues such as reduced seaweed production, existing spatial conflicts, lack of seed production facilities, proper seaweed quarantine facilities and legal framework, and credit and insurance for seaweed farming.

Key Issues in Promoting Seaweed Farming in India

Technical and Biological Challenges: One of the most significant challenges facing seaweed cultivation in India is the vulnerability of the existing strain of *Kappaphycus alvarezii* used for cultivation. Over time, this strain has lost its robustness, leading to slower growth rates and increased susceptibility to disease. This biological hurdle negatively impacts mass production and emphasizes the need for strain improvement and diversification. In addition, farmers face technical obstacles as they currently have limited access to advanced cultivation technology and a variety of seaweed seed options. This lack of resources restricts the scalability of operations and the exploration of different seaweed species that could potentially be more profitable or resilient.

Institutional and Policy Issues: Seaweed farming, particularly for small and marginal farmers, is fraught with considerable risks. The threat of cyclones, the absence of insurance coverage for losses, and fluctuating market prices pose severe challenges. The establishment of robust institutional support structures and comprehensive policies can help mitigate these risks. Furthermore, there is a potential for conflicts between seaweed farmers and fishers due to resource competition and disparities in social influence. These conflicts could further hinder the growth of the seaweed farming sector, emphasizing the need for well-structured regulations and conflict resolution mechanisms.

Market and Awareness: Despite the recent increase in awareness about the benefits of seaweed, its consumption as food in India is still virtually non-existent. This market challenge could be attributed to cultural dietary preferences, lack of culinary knowledge about seaweed, or concerns about its taste. On the production side, India's seaweed potential is significantly underutilized. The country's current production is only 0.0034% of the estimated potential of 10 million tonnes. Bridging this gap requires not just improving production techniques but also cultivating a domestic market for seaweed products.

Research and Development: The innovation ecosystem within India's seaweed sector is still underdeveloped. Most research and development successes are confined to laboratories and rarely transition to the field. This gap between research and implementation hampers the growth of the sector and inhibits the development of innovative, scalable, and sustainable seaweed farming practices.

Perception and Environmental Impact: Environmental impact concerns, despite lacking scientific evidence, have led to a negative public perception of Kappaphycus cultivation. This perception challenge could be addressed through transparent communication of cultivation practices, the environmental benefits of seaweed farming, and the publication of scientific research disproving harmful environmental impacts. Clear, science-based communication can help shift public opinion and support the growth of the seaweed sector.

Regional Potential in Seaweed Farming

Based on the issues identified during the Seaweed India 2022 and the recommendations there in a 10-point regional analysis (Table 1) is carried out for the member countries of the BOBP-IGO: Bangladesh, India, Maldives and Sri Lanka, where the reason for inclusion of India is also to provide a yardstick for relative opportunity. The analysis presented below draws from technical and institutional requirement for development of seaweed farming.

The analysis shows that all the countries meet ecological requirement for seaweed farming but are facing different levels of constraints in terms of economic and institutional factors such as market access, presence of domestic market and availability of labour.

Overall, the potential seems to be highest in India thanks to its emphasis on seaweed farming

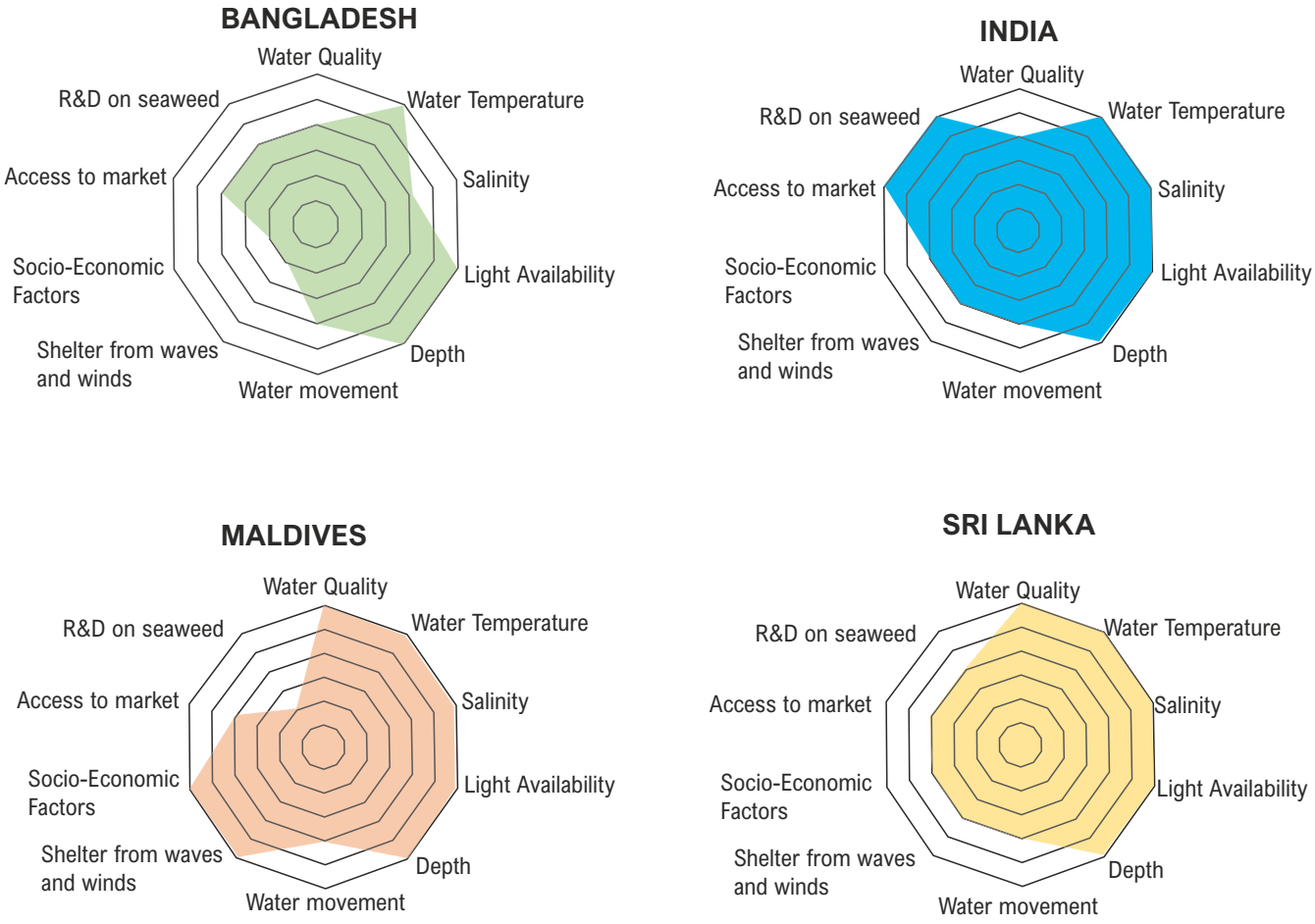


Figure 2. Graphical representation of seaweed farming potential of each country based on Table 1

(Score: Low = 1, Moderate = 2, High = 3; Total out of 30)

Table 1. Prospects of seaweed farming in BOBP region

Criteria Water Quality	Bangladesh Moderate	India Moderate	Maldives High	Sri Lanka High
The water quality should be good, with low levels of suspended solids and nutrients.	(Some coastal areas like the Sundarbans, Cox's Bazar, Teknaf are relatively pollution-free, else where it's a concern)	(Areas like Andaman, Lakshadweep and Gulf of Mannar are suitable, but pollution is a concern in many coastal regions)	(Generally clear, pollution-free waters)	(Most coastal areas have clear waters, but localized pollution can be a concern)
Water Temperature Optimal temperature is 20-30°C for most seaweeds	**High** (Year-long tropical climate)	**High** (Year-long tropical climate)	**High** (Year-long tropical climate)	**High** (Year-long tropical climate)
Salinity Optimal salinity is around 25-35 ppt for most seaweeds	**Moderate** (Salinity varies depending on location and season, with some areas suitable)	**High** (Most coastal regions have suitable salinity levels)	**High** (Surrounded by ocean, consistent salinity)	**High** (Most coastal regions have suitable salinity levels)
Light Availability Seaweeds require sufficient light for photosynthesis	**High** (Sunny climate)	**High** (Sunny climate)	**High** (Sunny climate)	**High** (Sunny climate)
Depth The depth of the water should be between 45-90 cm during extreme tides.	**High** (Shallow coastal areas)	**High** (Shallow coastal areas)	**High** (Shallow lagoons)	**High** (Shallow coastal areas)
Water movement The water movement should be gentle, with a current of 20-30 cm/sec.	**Moderate** (Varies depending on location)	**Moderate** (Varies depending on location)	**Moderate** (Varies depending on location)	**Moderate** (Varies depending on location)
Shelter from waves and winds The site should be sheltered from waves and winds.	**Low** (Cyclone risk mapping shows most of the Bangladeshi coast is highly exposed)	**Moderate** (While the east coast in cyclone prone, west coast is relatively calmer)	**High** (Relatively free from strong winds)	**Moderate** (Southwestern coast, eastern coast are possible areas)
Socio-Economic Factors The site should be acceptable to the local community.	**Low** (Bangladesh coastal waters are intensively used for fishing. There is some risk of conflict with intensive fishing)	**Moderate** (While the coastal water around the mainland is intensively fished, fishing pressure is relatively less in islands & protected areas)	**High** (Low fishing pressure. Large number of uninhibited atolls)	**Moderate** (Fishing pressure is concentrated in few areas only)
Access to market Access to markets, labour availability, infrastructure, potential for local use, etc.	**Moderate** Infrastructure and (market access could be improved, but labour availability is good)	**High** (Large coastal population, good infrastructure, and well-established markets)	**Moderate** (Limited local market and labour, but high potential for export)	**Moderate** (Limited local market and labour, but high potential for export)
R&D on seaweed Current level of R&D activities to promote seaweed farming based on publicly available information)	**Moderate** (There are ongoing programmes on seaweed farming)	**High** (Seaweed farming is identified as a priority area. Both public and private sectors are involved)	**Low** (Seaweed is not a research priority)	**Moderate** (Both public and private sectors are involved in seaweed research)

and large domestic market, followed by Sri Lanka. Maldives seems have the best suitable environment, however, priority on farming of seaweed seems to be low from publicly available information. In case of Bangladesh, despite priority, exposure of the coastline to cyclones, poses a significant risk for long term investment (Figure 2). Extensive fishing across the coast of Bangladesh is also another issue that needs to be addressed before developing large-scale seaweed farming. India also has a similar issue around the mainland. However, islands are relatively free from fishing pressure.

Moving Forward: Overcoming the Challenges in Seaweed Farming

The outcome of the Seaweed India 2022 and the above analysis shows the potential for seaweed farming in the region and the challenges need to be addressed. The following recommendation, developed during Seaweed India 2022 can provide a compass for all the countries in the region to develop sustainable seaweed farming sector given the similarities.

Technical and Biological Considerations: To overcome the issues related to the vulnerability of seaweed strains and the lack of seed options, a focus on enhancing seaweed species and seed supply is needed. Diversifying farmed seaweed species and focusing on genetic improvement of native species can help in sourcing fast-growing strains. It's also necessary to encourage private players to produce planting material and ensure a steady seed supply. Establishing robust quarantine and biosecurity measures can further help in securing the health of these strains. This could include developing specific quarantine procedures and infrastructure for seaweed, and streamlining procedures for importing live seaweed, including the establishment of an inter-departmental coordination committee.

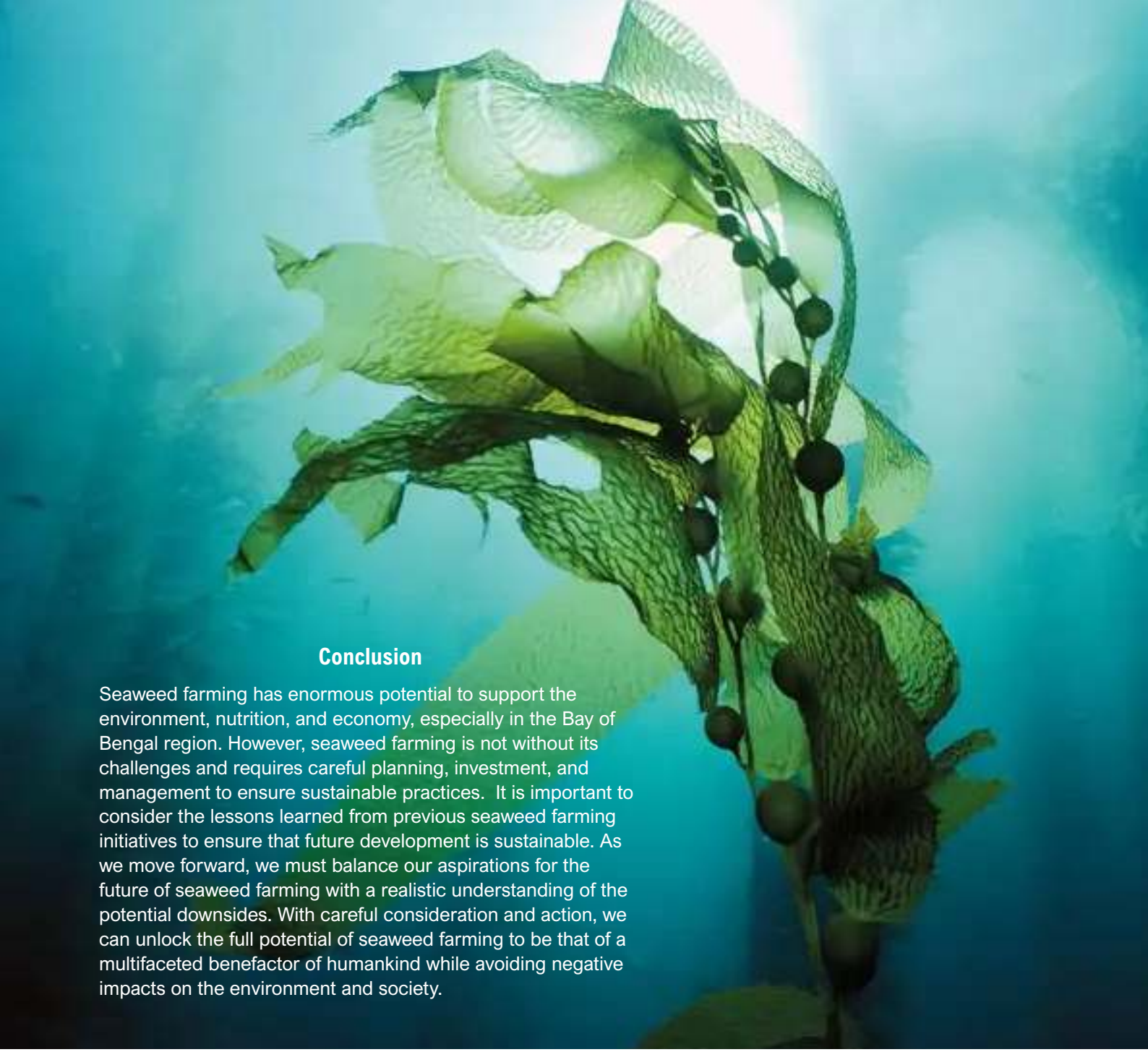
Institutional and Policy Requirements: Regulatory and policy modifications can help mitigate the risks faced by small and marginal farmers. This could include simplifying regulations regarding the import of exotic seaweed varieties, coastal and marine water farming, and quarantine rules. A single-window-clearance system for all aspects of seaweed development could also streamline operations. Moreover, improving social security and financial support for farmers could significantly reduce the risks they face. This could be achieved by issuing licenses to seaweed farmers, instituting an insurance scheme for risk mitigation, and extending credit support to seaweed farmers.

Market and Awareness Building: Promoting domestic consumption and market development can help overcome market and awareness challenges. Boosting domestic consumption of seaweed through product development, marketing, and awareness campaigns can help create a thriving domestic market. It would also be beneficial to formulate and implement seaweed-specific food safety standards.

Research and Development: Strengthening research and development could help address the gap between research and implementation. This could include promoting research with industrial applications, establishing seaweed seed banks, and conducting genetic improvement programs. Collaboration with international institutions for pilot studies on integrated multi-trophic aquaculture (IMTA) could also provide valuable insights. Supporting innovation and entrepreneurship in the sector could further drive growth. This could be achieved by setting up Business Incubation Centres in coastal states and consolidating benefits from initiatives like Start-up India, Make-in-India, PMMSY, etc., for budding entrepreneurs in the seaweed sector.

Perception and Environmental Impact Recommendations: Exploring the environmental benefits of seaweed cultivation can help overcome perception challenges. Conducting scientific studies to debunk environmental impact myths and exploring the potential of seaweed in carbon trading can help shift public opinion and increase support for seaweed farming.

Spatial Planning, Infrastructure, and Seaweed Hub Recommendations: Spatial planning and infrastructure development are essential for the growth and sustainability of the seaweed sector. Identifying and mapping suitable areas for seaweed cultivation, considering environmental safeguards, is an important step. The development of proper infrastructure for seaweed farming, including facilities for storing farming materials and seeds during extreme weather events, is equally important.



Conclusion

Seaweed farming has enormous potential to support the environment, nutrition, and economy, especially in the Bay of Bengal region. However, seaweed farming is not without its challenges and requires careful planning, investment, and management to ensure sustainable practices. It is important to consider the lessons learned from previous seaweed farming initiatives to ensure that future development is sustainable. As we move forward, we must balance our aspirations for the future of seaweed farming with a realistic understanding of the potential downsides. With careful consideration and action, we can unlock the full potential of seaweed farming to be that of a multifaceted benefactor of humankind while avoiding negative impacts on the environment and society.

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BOBP Impact

The Rocket thrust to Chandi Boat Motorisation in Bhola in 1980

R. Ravikumar, Naval Architect Ex FAO-BOBP

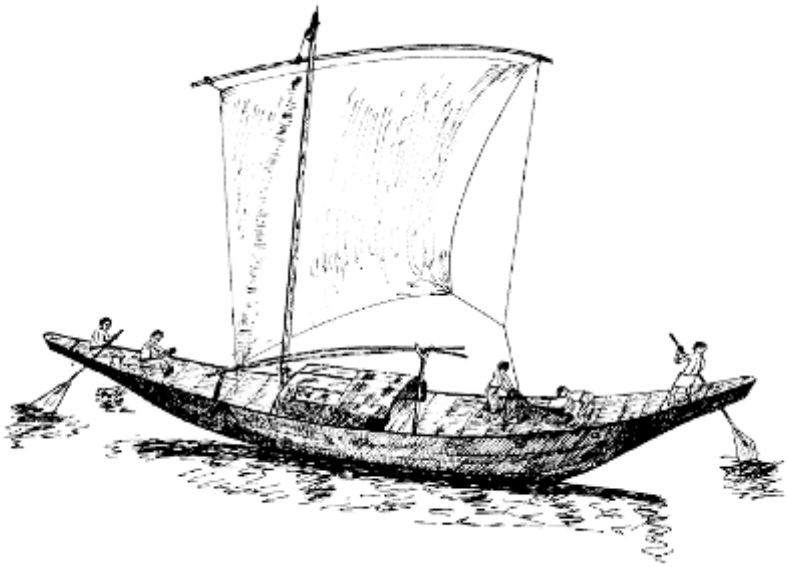
The genesis of this project was a request by the Bangladesh delegate at the BOBP Advisory Committee meeting in 1978 at Chittagong, to focus on motorisation of country craft and not on development of new capital-intensive designs of boats for marine fisheries as DANIDA were already involved in such an exercise at their boatyard in Chittagong. After all the bulk of the fisher community of his country who contributed to its economy were island based along the great rivers of Bangladesh – the Padma and the Meghna.

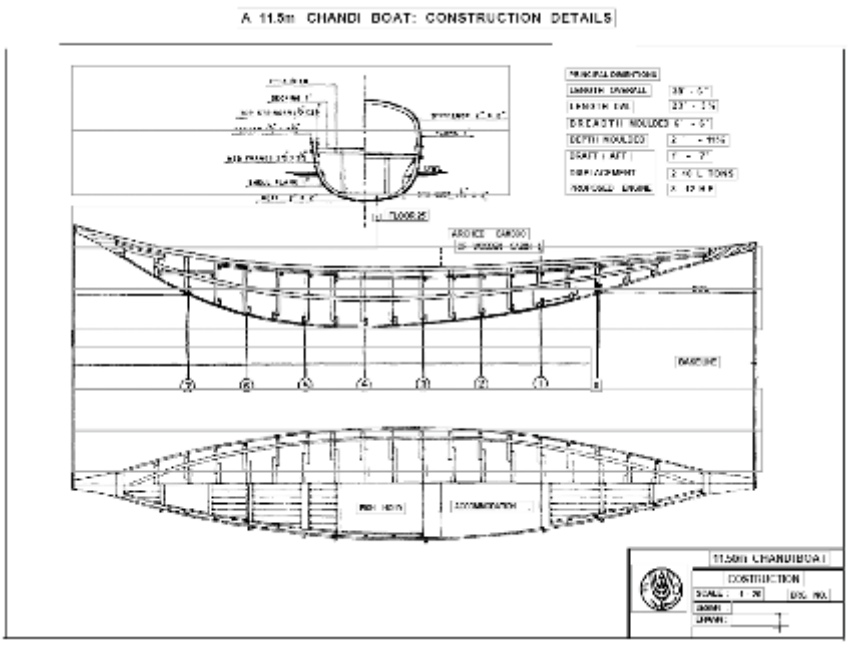
Most Chandi boats in Bhola were between 10 to 12 m long. They were keel less and with a very high stern from where the helmsman would steer them with a large steering oar. The deck was partly sheltered with a bamboo thatched roofing and loose planked with strips of bamboo. A square sail is sometimes used but in general they use the river currents to help them along. The crew comprised of up to ten persons besides the owner for rowing and operating the hilsa gill nets. They would operate along the river sometimes up to the mouth to reach the Bay of Bengal during winter months when the sea is placid and the grounds rich in Hilsa. An average voyage lasted about a week to ten days, depending on the catch. The Hilsa migrate from the sea to the freshwater rivers to breed and grow in the estuarine area and return back.

The hull construction of the Chandi boat was traditional and any thoughts of an inboard engine installation was ruled out due to the need for some major structural modifications. The simplest solution that came to mind was a long-tail engine installation, but on the side, due to the high stern and also to continue using the steering oar. A side installation was also necessary to attain good propeller immersion without too much inclination. The raising and lowering of the propeller permitted the boat to be beached easily and move in very shallow water.

Fishing trials with the motorised boats showed that they were technically and economically feasible. One should note that the increased catch for the motorized boats is mainly due to fishing on richer grounds inaccessible to non-motorized boats because of adverse currents, wind and distance. Another important advantage of motorisation was lesser crew fatigue on arrival at the fishing ground. The increase in income was substantial and in fact, after a year, the two boat owners bought the engines used for trial out of their increased earnings. This positive attitude by the fishermen caused BFDC to approach UNFDC to fund a project for the supply of 500 engine installations, but alas, this fell through due to inadequate institutional support for overseeing the project according to the funding agency.

BOBP, however, was convinced that they were on to a good thing and prepared a project for 50 installations for DoF to implement



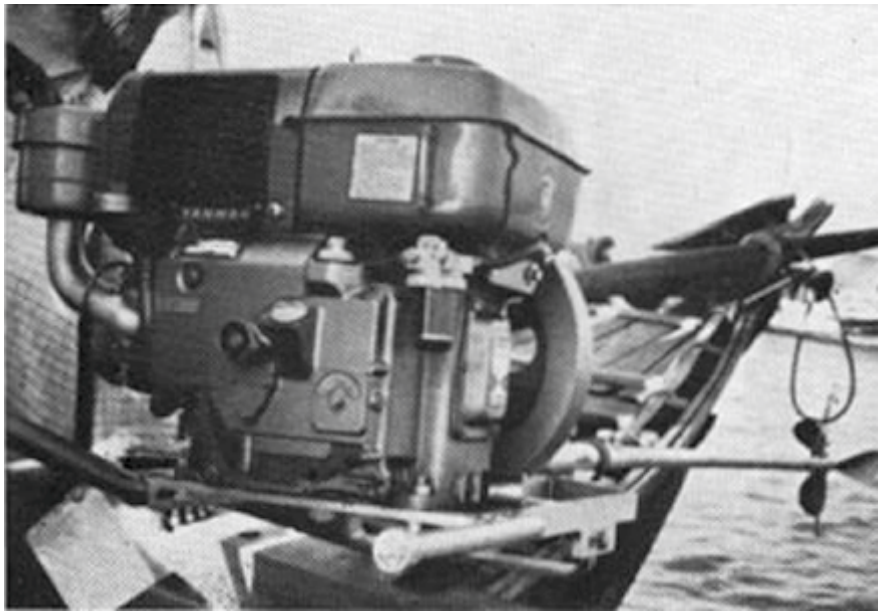


with cooperation from Swedish Free Mission in selecting the beneficiaries. The cost of the engines and the fishing gear given to them were to be paid back from the earnings over time. In fact, it was a novel concept, as projects rarely aimed at cost recovery. However, the success demonstrated was adequate for BOBP to take this route. Ten Yanmar engines were provided by the BOBP in 1987 to kickstart this catalyst project followed by a further ten Kubota engines (cheaper than the Yanmar) in 1988, and motorisation was on a roll.

Subsequently, proving BOBP right, all loans for the engines and fishing gear were repaid by the fishermen from their increased earnings. Motorization gained momentum steadily in Bangladesh and by 1988 thirty more boats were motorised with longtails due to private sector interest. Around this time, heavy erosion in Daulatkhan Thana and Radhavallabh village in particular changed the topography of the shoreline. The fishing village as I knew it ceased to exist, I was told. Mudflat riverbanks vanished, while new creeks and channels were formed near most fishing villages. The boats had to be anchored; not beached, and overcrowding created a problem on account of the side-mounted longtail engines. This led to a switch over to inboard engine installation by making the Chandi boats structurally stronger and by providing a keel.

However, this episode of motorization of Chandi boats in Bangladesh would remain one of the major impacts of BOBP. While use of outboard long-tail motor was short-lived, the scope of using a motor caught on and led to subsequent modifications of Chandi boats to enable inboard motor installation and motorisation of country craft flourished in Bangladesh.

Those interested in the economic analysis and a more comprehensive look at the evolution of motorisation of Chandi boats in Bangladesh may refer BOBP/REP/18 by R. Ravikumar and Tong Nadgratok and BOBP/REP/64 in 1994 by Robert Hall and Abul Kashem.



The first longtail installation by BOBP in 1980

BOBP-IGO in the Media

മത്സ്യബന്ധനം: രാജ്യാന്തര സമ്മേളനം തുടങ്ങി

സമുദ്രമത്സ്യബന്ധനം സുസ്ഥിരമാക്കണം; വഴിതുറന്ന് രാജ്യാന്തര സമ്മേളനത്തിന് തുടക്കം

സുസ്ഥിര സമുദ്ര മത്സ്യബന്ധനം: രാജ്യാന്തര സമ്മേളനത്തിന് തുടക്കം

Mid-day Gujarati Inquilab

mid-day

India's marine scientists emphasise on artificial reefs to aid production, fishermen's livelihood

Mathrubhumi മാതൃഭൂമി

സുസ്ഥിര സമുദ്രമത്സ്യബന്ധനം രാജ്യാന്തര സമ്മേളനം തുടങ്ങി

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Marine scientists bat for artificial reefs

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Marine scientists bat for artificial reefs

Kochi, Feb 15 India's marine fisheries is on the verge of a transformation, with marine scientists proposing artificial reefs to increase fish production and promote fishermen's livelihood.

The scientists opened up on this topic at a brainstorming session held on the sideline of the ongoing symposium on innovations being held here.

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രാജ്യങ്ങൾ തമ്മിൽ ഗവേഷണ സഹകരണം അനിവാര്യമെന്ന് വിദഗ്

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Tuesday, Feb 21 2023 | Time 12:04 Hrs(IST)

Artificial reefs offer a bright prospect for marine fish

Kochi, Feb 15 (UNI) India's marine fisheries is on the verge of a transformation, with scientists proposing artificial reefs to increase fish production and promote fishermen livelihood.

Some experts call it a milestone in the sector as the innovative technology creates ad areas as fish habitats.

During a brainstorming session held on the sideline of the ongoing symposium on in in fishing technologies, scientists from the ICAR-Central Marine Fisheries Research (CMFRI) on Wednesday said the deployment of artificial reefs (AR) on the sea bed w enhance the growth of marine fauna and flora, and stimulate natural settings for fis production.

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INDIA New England NEWS

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മെട്രോ വാർത്ത

മത്സ്യോൽപാദനം കൂട്ടാൻ കൃത്രിമ മത്സ്യആവാസവ്യവസ്ഥ

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സുസ്ഥിര മത്സ്യബന്ധനം: സമ്മേളനം തുടങ്ങി

കൊച്ചി▸ മത്സ്യത്തൊഴിലാളികളു ടെ ഉപജീവനം മെച്ചപ്പെടുത്താൻ സാങ്കേതിക വിദ്യകംപൊപ്പം പരമ്പരാഗത അറിവുകളും സംയോജിപ്പിക്കണമെന്ന് വിദഗ്ധർ. സുസ്ഥിര മത്സ്യബന്ധനവുമായി ബന്ധപ്പെട്ട അന്താരാഷ്ട്ര സമ്മേളനത്തിലെ പാനൽ ചർച്ചയിലാണ് ഈ നിർദേശം ഉയർന്നത്. ഓരോ പ്രദേശത്തിനും അനുയോജ്യമായ സാങ്കേതികവിദ്യകം വികസിപ്പിക്കണമെന്ന് ലോക ഭക്ഷ്യ കാർഷിക സംഘടനയിലെ ഫിഷറി ഇൻഡസ്ട്രി ഓഫിസർ ജോൺ ലാൻസ്ലി പറഞ്ഞു.

കാലാവസ്ഥാ വ്യതിയാനത്തെ തുടർന്നുള്ള പ്രകൃതി ദുരന്തങ്ങൾ കൂടി മത്സ്യസമ്പത്തിൽ കുറവ് വരുന്ന സാഹചര്യത്തിൽ ചെറുകിട മത്സ്യത്തൊഴിലാളികൾക്ക് ഇൻഷുറൻസ് പരിരക്ഷ പോലുള്ള സംവിധാനം ഏർപ്പെടുത്തണമെന്നും വിദഗ്ധർ ആവശ്യപ്പെട്ടു.

മത്സ്യത്തൊഴിലാളികൾക്ക് ഇൻഷുറൻസ് പരിരക്ഷ വേണം;വിദഗ്ധർ

കൊച്ചി: കാലാവസ്ഥാ വ്യതിയാനത്തെ തുടർന്നുള്ള പ്രകൃതി ദുരന്തങ്ങൾ, ചൂണ്ടിക്കാട്ടി, മത്സ്യസമ്പത്തിലെ കുറവ് എന്നിവ വർധിക്കുന്ന സാഹചര്യത്തിൽ ചെറുകിട മത്സ്യത്തൊഴിലാളികൾക്ക് സാമ്പത്തിക സുരക്ഷിതത്വം ഉറപ്പാക്കുന്ന ഇൻഷുറൻസ് പരിരക്ഷ പോലുള്ള സംവിധാനം ഏർപ്പെടുത്തണമെന്ന് വിദഗ്ധർ. സുസ്ഥിര മത്സ്യബന്ധനവുമായി ബന്ധപ്പെട്ട രാജ്യാന്തര സമ്മേളനത്തിൽ നടന്ന പാനൽ ചർച്ചയിലാണ് ഈ നിർദേശം ഉയർന്നത്. ഓരോ പ്രദേശത്തിനും അനുയോജ്യമായ സാങ്കേതികവിദ്യകം വികസിപ്പിക്കണമെന്ന് ലോക ഭക്ഷ്യ കാർഷിക സംഘടനയിലെ ഫിഷറി ഇൻഡസ്ട്രി ഓഫിസർ ജോൺ ലാൻസ്ലി പറഞ്ഞു.

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മത്സ്യത്തൊഴിലാളികൾക്ക് ഇൻഷുറൻസ് പരിരക്ഷ വേണമെന്ന് വിദഗ്ധർ

കൊച്ചി: കാലാവസ്ഥാവ്യതിയാനത്തെ തുടർന്നുള്ള പ്രകൃതി ദുരന്തങ്ങൾ, ചൂണ്ടിക്കാട്ടി, മത്സ്യസമ്പത്തിലെ കുറവ് എന്നിവ വർധിക്കുന്ന സാഹചര്യത്തിൽ ചെറുകിട മത്സ്യത്തൊഴിലാളികൾക്ക് സാമ്പത്തിക സുരക്ഷിതത്വം ഉറപ്പാക്കുന്ന ഇൻഷുറൻസ് പരിരക്ഷ പോലുള്ള സംവിധാനം ഏർപ്പെടുത്തണമെന്ന് വിദഗ്ധർ. സുസ്ഥിര മത്സ്യബന്ധനവുമായി ബന്ധപ്പെട്ട രാജ്യാന്തര സമ്മേളനത്തിൽ നടന്ന പാനൽ ചർച്ചയിലാണ് ഈ നിർദേശം.

മത്സ്യത്തൊഴിലാളികളുടെ ഉപജീവനം മെച്ചപ്പെടുത്താൻ സാങ്കേതിക വിദ്യകൾക്കൊപ്പം അതാതു സ്ഥലങ്ങളിലെ തദ്ദേശീയ പരമ്പരാഗത അറിവുകൾ സംയോജിപ്പിക്കണമെന്നും നിർദേശമുയർന്നു. കടലിൽ മത്സ്യലഭ്യതയ്ക്കായി മത്സ്യമേഖലയിൽ നിന്നുള്ള സംഭാവന മെച്ചപ്പെടുത്താൻ ഓരോ പ്രദേശത്തിന് അനുയോജ്യമായ സാങ്കേതികവിദ്യകളാണ് വികസിപ്പിക്കേണ്ടതെന് ഐക്യരാഷ്ട്രസഭയ്ക്ക് കീഴിലുള്ള ലോക ഭക്ഷ്യ കാർഷിക സംഘടനയിലെ (എഫ്എഫ്എ) ഫിഷറി ഇൻഡസ്ട്രി ഓഫിസർ ജോൺ ലാൻസ്ലി പറഞ്ഞു. മത്സ്യമേഖലയിലെ സാങ്കേതികവിദ്യകളെക്കുറിച്ച് ഇന്ത്യ, ശ്രീലങ്ക, മാലിദ്വീപ് പ്രതിനിധികളിൽ നിന്നുള്ള ഡോ. പി. കൃഷ്ണൻ, ജർമനിയിൽ നിന്നുള്ള ഡോ. ഡാനിയൽ സ്റ്റെപ്പുട്ടിസ്, സിഫ്റി ഡയറക്ടർ ഡോ. ജോർജ് ഈനാൻ, ഡോ. ബി കെ. ദാസ്, ഡോ. ഇ. വിവേകാനന്ദൻ, സെബാസ്റ്റ്യൻ മാത്യു, ഡോ എം. വി ബൈജു എന്നിവർ സംസാരിച്ചു. 30 രാജ്യങ്ങളിൽ നിന്നുള്ള പ്രതിനിധികൾ സംബന്ധിക്കുന്ന രാജ്യാന്തര സമ്മേളനം ഇന്ന് സമാപിക്കും.

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വേൾഡ്മലയാളിവോയ്സ്

Blend tech with indigenous knowledge to improve fishermen's livelihood: Experts

MARINE scientists and experts from across the globe have called for blending technological innovations with indigenous traditional knowledge in respective regions to improve livelihood of fishermen, online news sites report quoting IANS.

They were speaking at a panel discussion on future proofing of small-scale fishers on the sidelines of the ongoing international symposium on innovations in fishing technology, here on Thursday.

Referring to major challenges in the small-scale fisheries (SSF), John Lansley, Fishery Industry Officer of the Food and Agriculture Organisation of the UN said culturally appropriate technologies significant to respective regions need to be developed to enhance the contribution of fishing to food security.

"Relevant innovations are crucial to meet a set of targets such as sustaining production in coastal waters, mitigating climate change, developing mariculture, reducing conflict among multiple users of coastal zones, tackling trade barriers and developing value chain. In addition to scientific and technological innovations, effective utilisation of age-old indigenous traditional knowledge existing in different localities as much as possible is of utmost importance to develop the SSF and improve the livelihood of traditional fishers", said Lansley.

Dr P Krishnan, Director of the Bay of Bengal Programme-Inter Governmental Organisation (BOBP-IGO) said mainstreaming the small-scale fisheries sector is the need of the hour, to deal with the concerns such as low productivity, low price realisation and labour issues.

.com/news 2023 ഫെബ്രുവരി 17

'ചെറുകിട മത്സ്യത്തൊഴിലാളികൾക്ക് ഇൻഷുറൻസ് പരിരക്ഷ അത്യാവശ്യം'

കൊച്ചി• കാലാവസ്ഥാ മാറ്റത്തിൽ പ്രകൃതിദുരന്തങ്ങളും ചൂണ്ടിക്കാട്ടിയും ഉണ്ടാകുകയും മത്സ്യസമ്പത്തു കുറയുകയും ചെയ്യുന്ന സാഹചര്യത്തിൽ ചെറുകിട മത്സ്യത്തൊഴിലാളികൾക്കു സാമ്പത്തിക സുരക്ഷ ഉറപ്പാക്കാൻ ഇൻഷുറൻസ് പരിരക്ഷ അത്യാവശ്യമാണെന്നു വിദഗ്ധർ.

സുസ്ഥിര മത്സ്യബന്ധനവുമായി ബന്ധപ്പെട്ട രാജ്യാന്തര സമ്മേളനത്തിലെ പാനൽ ചർച്ചയിലാണു നിർദേശം. കേരളമുൾപ്പെടെയുള്ള തീരസംസ്ഥാനങ്ങളിൽ നിന്നുള്ള പ്രതിനിധികൾ സംബന്ധിക്കുന്ന രാജ്യാന്തര സമ്മേളനം ഇന്നു സമാപിക്കും.

കടലിൽ മത്സ്യലഭ്യതയ്ക്കായി മത്സ്യമേഖലയിൽ നിന്നുള്ള സംഭാവന മെച്ചപ്പെടുത്താൻ ഓരോ പ്രദേശത്തിന് അനുയോജ്യമായ സാങ്കേതികവിദ്യകളാണ് വികസിപ്പിക്കേണ്ടതെന് ഐക്യരാഷ്ട്രസഭയ്ക്ക് കീഴിലുള്ള ലോക ഭക്ഷ്യ കാർഷിക സംഘടനയിലെ (എഫ്എഫ്എ) ഫിഷറി ഇൻഡസ്ട്രി ഓഫിസർ ജോൺ ലാൻസ്ലി പറഞ്ഞു.

ബേ ഓഫ് ബംഗാൾ പ്രോഗ്രാം (ബിഒബിപി) ഡയറക്ടർ ഡോ. പി. കൃഷ്ണൻ, ജർമനിയിൽ നിന്നുള്ള ഡോ. ഡാനിയൽ സ്റ്റെപ്പുട്ടിസ്, സിഫ്റി ഡയറക്ടർ ഡോ. ജോർജ് ഈനാൻ, ഡോ. ബി. കെ. ദാസ്, ഡോ. ഇ. വിവേകാനന്ദൻ, സെബാസ്റ്റ്യൻ മാത്യു, ഡോ. എം. വി. ബൈജു എന്നിവർ പ്രസംഗിച്ചു. സമ്മേളനം ഇന്നു സമാപിക്കും.

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BOBP Bay of Bengal Programme Inter-Governmental Organisation

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